

CORPORATE SOCIAL RESPONSIBILITY REPORT

# CSR REPORT 2019



## CONTACT INFORMATION

Nippon Light Metal Holdings Company, Ltd.

CSR Contact, Central CSR and Audit Office

Tennozu Ocean Square, 2-2-20 Higashi Shinagawa, Shinagawa-ku, Tokyo, 140-8628

TEL.03-5461-8645 FAX.03-5461-9188

<https://www.nikkeikinholdings.co.jp>

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**Introduction**

The aim of this CSR Report 2019 of the Nippon Light Metal (NLM) Group is to ensure that the NLM Group's CSR-related approach and initiatives are understood by our stakeholders by reporting them in a way that is easy to understand.

The NLM Group recognizes the social issues surrounding it. We are also aware of the climate change problem and ESG investments, which are receiving increasing attention in recent years, and global initiatives including SDGs. We pursue CSR initiatives that help to solve these issues. We would appreciate it if you would read about the initiatives we take to address each of the issues and provide us with opinions and comments.

**Reference guidelines**

This report was created by referring to the Environmental Reporting Guidelines 2018 (Ministry of the Environment) and the Global Reporting Initiative (GRI) Standards.

**Period covered**

Data for the report were collected between April 2018 and March 2019. \* Data collected before or after this period are also used in some sections of this report.

**Scope of the report**

This report describes the activities of and facts about Nippon Light Metal Holdings Co., Ltd. and its 77 consolidated subsidiaries (a total of 78 companies) unless otherwise specified.

**Period of issuance**

October 2019 (Next report: To be issued in October 2020; Previous report: Issued in October 2018)

**Independent assurance**

A ★ symbol indicates that a third party, KPMG AZSA Sustainability Co., Ltd., has provided independent assurance regarding the reliability of the data.

Awards



Reporting media of CSR information

This report describes the CSR initiatives that were taken by the NLM Group in FY2018. Further information are available on our official website.

Non-financial information

- CSR Report (Brochure/ PDF)
- Website <https://www.nikkeikinholdings.co.jp/csr/> <https://www.nikkeikinholdings.com/csr/> (English)



Financial information

- Website <https://www.nikkeikinholdings.co.jp/ir-data/>



Stock Indexes



Initiatives for SDGs and creation of Special Features pages of the CSR Report

In the CSR Report 2017, the NLM Group expressed its determination to work on SDGs. Since then, we have been advancing initiatives such as discussions within the CSR Committee, dissemination of information via our internal newsletters, mapping, and selection of issues of individual businesses. In addition, as partially introduced in this report, we are having discussions to ensure that material issues selected for the overall group and each main sector will be linked to SDGs.

Since we began to issue CSR Reports in 2011, the reports' Special Features have been created by more than ten members of the group. The main chapters have also been created by around ten members of the secretariat. In creating this CSR Report 2019, members of this year's production team, those from the secretariat, members of past production teams, and others who were interested attended Workshop 2030 SDGs, which was given by Imacocollabo, a general incorporated association, to develop better understanding of SDGs. This workshop was also given at the meeting of environmental practitioners that was held in May 2019 and contributed greatly to the spreading of SDGs internally. There are still many people who are interested in the seminar, so we will continue to take similar initiatives.



Workshop 2030 SDGs



Cover page design

Common kingfishers prefer refreshing streams as their habitats. When the natural environment was being destroyed in Japan during its post-war economic boom, this species of bird was called the symbol of the destruction of nature. In recent years, however, these birds are seen in urban rivers and park ponds due to the improvement of water quality. Because of this, the common kingfisher is said to be a barometer of environmental pollution.

Members of this report's production team selected this bird as the motif of the cover page design, wishing that the NLM Group will contribute to environmental protection and be a 100-year corporate group that continues to operate its businesses and organizations in an agile manner like the common kingfisher, whose body color is the same color as our corporate blue.



# Building a sustainable society with the power of Team NLM

Based on the firm business foundation that we have developed so far, we will contribute to building a sustainable society by taking advantage of the strengths of Team NLM to achieve new growth.



## 80<sup>th</sup> anniversary, and aiming for a 100-year corporate group

Nippon Light Metal Co., Ltd., the core company of the NLM Group, celebrated its 80<sup>th</sup> anniversary in March 2019, and the group took a new step forward.

The history of the NLM Group goes back to the early 1940s, when it started aluminum smelting in Shizuoka and Niigata. While the aluminum smelting industry achieved growth with the economic development of Japan that began in the 1950s, we expanded our operations by accepting a large number of aluminum processing manufacturers as our group companies.

Later, the aluminum smelting industry, which should be considered a representative of industries with large power consumption, was to exit the market due to the oil shocks that began in 1973. However, the NLM Group has kept growing to date, mainly in the field of processing, by pursuing the potential of aluminum, a material with excellent properties.

At the NLM Group, we will tirelessly continue to develop environmentally friendly products and services while continuing to value our manufacturing spirit that has been passed down since our foundation and maintaining our inexhaustible explorer spirit.

## Overcoming crisis and achieving the sustainability of society and the company

Today, aluminum is used in a broad range of fields including food, healthcare, construction, transportation equipment, electric and electronic equipment, and machine equipment. This is because the superior properties of aluminum, such as its light weight, thermal conductivity, and workability, are useful in many fields and diverse applications. Another important factor is the existence of abundant bauxite reserves, the source of aluminum, evenly distributed around the world. This has led to the establishment of an international market and stable prices. It is aluminum's high functionality as a material and its marketability as a product that has instigated its wide application in many industrial and household uses.

Further, aluminum features a diversity of alloys and manufacturing methods. This allows an alloy design and manufacturing method to be selected by each user for each product, catering to diverse needs. We have developed applications for aluminum together with users by reducing its weight while keeping it rigid, downsizing it while maintaining its

dimensional precision, improving its heat-exchange efficiency while reducing cost, and improving its decorative value while maintaining its rigidity. As a result of these initiatives, aluminum has become a material essential for our lives, and new demand for the material will be triggered by market diversification and the growth of developing countries. As before, we will continue to identify those new needs accurately together with users. Regardless of what industries will rise, and which countries or regions will develop, we will continue to collaborate and cooperate closely with users to develop applications for aluminum. We believe that our mission is to maximize the value of this metal, which is both functional and marketable, and provide it to the market, and this is where our corporate value lies. We will continue to pursue the value as before.

On the other hand, high energy consumption and the subsequent CO<sub>2</sub> emissions in the aluminum smelting process is a major drawback of the material. There is a risk that problems like these will lead to a move to avoid aluminum if the energy supply-demand balance in the world tightens or the impact of global warming becomes more serious. Therefore, we regard the reduction of CO<sub>2</sub> emissions in the aluminum supply chain as an important task of aluminum manufacturers.

Fortunately, aluminum is superior in economic efficiency because its recycling rate is high in terms of both quality and quantity and its value is not greatly lowered by recycling. This has led to the natural development of a global system for recycling aluminum. The NLM Group is the only aluminum manufacturer in Japan that has technologies, products, and services, and businesses, in both fields where new ingots are primarily used and fields that primarily use recycled ingots. We are sure that the development of recycling technologies for the material will be another core mission of the NLM Group, following the application development that we have been working on. The value we have been providing to society through aluminum must hereafter be provided together with quality, combined with the added value of energy conservation and decarbonization.

We overcame the major crises of the oil shocks. We will continue to recognize the risks involved in aluminum, due to the increasing importance of decarbonization and risks stemming from climate change, to our businesses and provide products and services that cater to the changing needs of society. With those products and services, we will do more than satisfy our customers' desires, and contribute to a sustainable society.

## Evolving into a sustainable, groundbreaking innovator of aluminum and beyond by leveraging the strengths of Team NLM

At the NLM Group, our group companies operate businesses across a broad range of aluminum-related domains. We have a

comprehensive capability covering design, installation, services, and after-sales maintenance in addition to manufacturing.

The slogan of the NLM Group, *groundbreaking innovator of aluminum and beyond*, reflects our intention to continue creating attractive features that are different from those of other material manufacturers, by taking advantage of our comprehensive capability as the strength we have as Team NLM and keeping ourselves sensitive to the needs of customers. What defines added value is determined by customers, and by society behind them, instead of ourselves. I believe it is important to give our full attention to society via our customers, identify the needs of society, and reflect them in our products and services. If we pursue the things that only Team NLM can accomplish in reflecting these needs, we will be able to compete in a different dimension than other material manufacturers. Giving our full attention to society by taking advantage of the material's strength, which is also the strength and origin of Team NLM, providing products and services tailored to social needs, and having their added value recognized by society -- these are the tasks of the *groundbreaking innovator of aluminum and beyond* that we aim to be.

The Paris Agreement, which was adopted in 2015 to mitigate global warming, aims to keep the average global temperature rise well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. However, it will be extremely difficult to achieve these targets if the measures we take continue to evolve at the current rate. Last year, we formulated a plan to reduce greenhouse gas emissions, specifying FY2030 as the target year, to ensure that aluminum will continue to satisfy needs relating to the prevention of global warming and contribute to the building of a sustainable society. This year, we began to select material issues with awareness of the risks and opportunities associated with climate change and contributions toward achieving Sustainable Development Goals (SDGs). We will give our full attention to all stakeholders to solve the various social issues set forth in SDGs, including global warming. Thus, we will continue our activities with determination to become a *groundbreaking innovator of aluminum and beyond*.

We hereby report the achievements and issues of our CSR activities at the NLM Group. We would appreciate your frank opinions.

August 2019  
Nippon Light Metal Holdings Company, Ltd.  
President and Chief Executive Officer

I. Okamoto

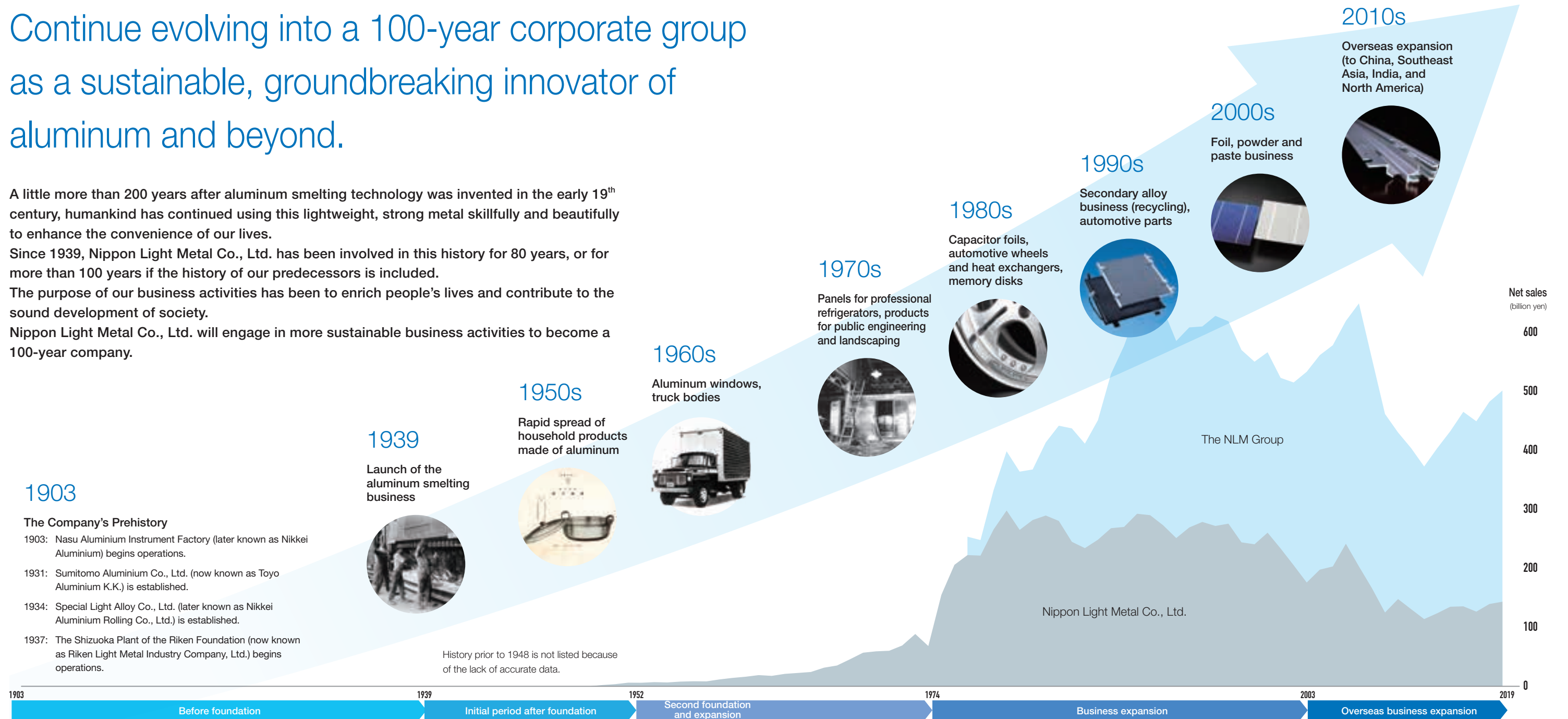
# Continue evolving into a 100-year corporate group as a sustainable, groundbreaking innovator of aluminum and beyond.

A little more than 200 years after aluminum smelting technology was invented in the early 19<sup>th</sup> century, humankind has continued using this lightweight, strong metal skillfully and beautifully to enhance the convenience of our lives.

Since 1939, Nippon Light Metal Co., Ltd. has been involved in this history for 80 years, or for more than 100 years if the history of our predecessors is included.

The purpose of our business activities has been to enrich people's lives and contribute to the sound development of society.

Nippon Light Metal Co., Ltd. will engage in more sustainable business activities to become a 100-year company.



## History and significance of our businesses

1903

**Nasu Aluminium Instrument Factory, an aluminum instrument manufacturer, starts business.**

Pots, teapots, and other household products marked with the trademark "Nigiriya" depicting a hand holding arrows contributed greatly to cultivating demand for aluminum in Japan in the early days.



1939

**Nippon Light Metal Co., Ltd., is established with investment mainly from Tokyo Electric Power and Furukawa Electric Co., Ltd., to begin aluminum smelting.**

The establishment of this aluminum smelting manufacturer with large-scale hydroelectric power generation facilities contributed greatly to the stable supply of aluminum, which was undergoing the expansion of its applications for industrial and household use.



1952

**A Capital and technology partnership is formed with Aluminum Limited (later known as Alcan, and now known as Rio Tinto) of Canada.**

World-leading technologies obtained through this partnership with a major global aluminum manufacturer paved the way for new products and technologies to be developed and supported the explosive growth of demand in the post-war economic boom.



1974

**The company merges with Nikkei Aluminium Co., Ltd. and establishes an integrated system for manufacturing aluminum products through business transfer from Nikkei Aluminium Rolling Co., Ltd.**

The increase of electricity costs from the oil shocks led to the rapid progress in business transformation from aluminum smelting to a business portfolio centered on aluminum processing.



1998

**The company merges with Toyo Aluminium K.K.**

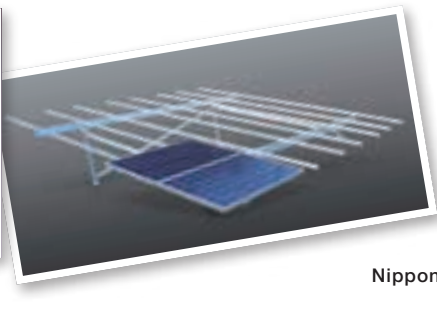
Addition of the final manufacturing processes for aluminum foil enabled diversification of the group's businesses and development of environmentally friendly products such as products for solar power generation.



2012

**Holding company structure**

Management of businesses that rose and grew in the period of business expansion was integrated, and cross-functional collaboration between them was strengthened, resulting in the birth of Team NLM, which provides more sophisticated, meticulous services to users.



2019

**Head office relocation (plan)**

The head office will be relocated back to the place of our foundation after 80 years, marking the opening of a new page in our history as a groundbreaking innovator of aluminum and beyond.





## Review of the mid-term management plan for FY2016 to FY2018

In the mid-term management plan for the three years starting April 2016 (hereinafter “MTMP 2016”), the NLM Group strived to maximize its consolidated earnings and strengthen its financial foundation under the three basic policies of creating new products and business models by strengthening cooperation within the group, business development through regional and sector strategies, and strengthening the corporate culture (strengthening our business foundations). As a result, among the performance

targets for the fiscal year ended March 2019, the final year of MTMP 2016, we achieved targets for net sales, ordinary profit, and profit attributable to owners of parent, and only our operating profit target was unachieved due to the slowdown of the Chinese economy and worsening of the market environment related to semiconductors and electric and electronic equipment. Concerning key financial performance indicators, we achieved all targets.

### Key indicators and results under the mid-term management plan for FY2016 to FY2018

(Billion yen)

	FY2015 (Results)	FY2018 (Targets under MTMP2016)	FY2018 (Results)	Difference (Compared to targets)
Net sales	464.4	500.0	500.5	+0.5
Operating profit	26.8	32.0	30.1	△1.9
Ordinary profit	24.5	31.0	31.1	+0.1
Profit attributable to owners of parent	15.5	20.0	20.6	+0.6
Interest-bearing debt	182.2	160.0	139.6	△20.4
D/E Ratio* <sup>1</sup>	1.4	1 or below	0.7	△0.3
ROCE(%)* <sup>2</sup>	9.0	Over 10%	10.8	+0.8

\*1 D/E ratio (Ratio of interest-bearing debt to equity): Interest-bearing debt / Shareholders' equity

\*2 ROCE (Return on capital employed): Ordinary profit before deduction of interest expenses / Capital employed (Shareholders' equity + Interest-bearing debt – Cash and deposits)

## Mid-term management plan for FY2019 to FY2021

# Working as Team NLM to be a groundbreaking innovator of aluminum and beyond

Under the new mid-term management plan that was launched in FY2019 (hereinafter, “MTMP2019”), we will aggressively invest in the management of resources, including funds and human assets while enhancing and continuing initiatives under

MTMP2016, with which we made a certain level of achievement in the improvement of earning power and financial foundation. Thus, we will aim to achieve further growth as a groundbreaking innovator of aluminum and beyond.

## 1. Basic policies

### (1) Create new products and businesses

- ➔ Create new value for all customers by thoroughly pursuing group-wide cooperation
- ➔ Develop products and businesses, taking advantage of the supply chain with our manufacturing at the core

### (2) Invest resources for growth

- ➔ More vigorously invest resources into fields and regions where the group's strengths can be utilized
- ➔ Manage the group's organizations agilely and utilize external resources according to businesses

### (3) Strengthen the management foundation

- ➔ Give top priority to safety and ensure compliance and quality
- ➔ Enrich human assets to improve corporate value sustainably

### (1) Create new products and business

The NLM Group operates businesses in wide-ranging fields related to aluminum and has comprehensive capabilities extending from design, installation, and services to after-sales services and maintenance in addition to manufacturing. Capitalizing on these comprehensive

capabilities, we will thoroughly pursue group-wide cooperation involving suppliers to create competitive new products and businesses attuned to market needs and offer such products to an ever-broader customer base.

	Fields	Group companies
Environmentally friendly vehicles	Automotive/transport	Nippon Light Metal Co., Ltd., Nikkeikin Aluminium Core Technology
Lithium-ion batteries	Automotive, electrical/electronics, the environment	Nippon Light Metal Co., Ltd., Toyo Aluminium, Nikkeikin Aluminium Core Technology, Nippon Electrode
Medical and pharmaceutical	Electrical/electronics, food/healthcare, etc.	Nippon Light Metal Co., Ltd., Toyo Aluminium, Nikkei Panel System
Extension of the lifespan of infrastructure	Public engineering/landscaping	Nippon Light Metal Co., Ltd., Nikkeikin Aluminium Core Technology, Sumikei-Nikkei Engineering
Maintenance and other services	Automotive/transport, food/healthcare, etc.	Nippon Fruehauf, Nikkei Panel System



Lithium ion battery case



A clean room using flat panels



Powder laminated foil



Bridge inspection walkway [KERO®]



Temperature controlled vans

### (2) Invest resources for growth

In view of the NLM Group's current situation, we will invest resources more aggressively than before to achieve further growth. Based on our “Start small and let it grow” policy, we will identify market trends and execute aggressive investment in fields and regions where the group's

strengths can be best utilized. In addition, to execute aggressive investment, we will manage organizations with agility according to individual businesses and utilize external resources as necessary.

Region	Business development	Strength	Field
Japan	Capital investment for new products, investment for capacity expansion	Integrated system, technological development capabilities	Automotive, batteries, thermal, the environment, etc.
Japan	Construction of the Engineering Development Center	No. 1 market share, capability to handle large projects, network for engineering/ installation	Food/ healthcare, electrical/electronics
China	Capital investment for new products	Extrusion of complex shapes, high-precision extrusion, machining, high-frequency bonding, assembly	Automotive, thermal
India	Establishment of a manufacturing/ sales site	Alloy development, collaboration	Automotive
North America	Establishment of a manufacturing/ sales site	Design, alloy, casting, forging, fabrication	Automotive

### (3) Strengthen the management foundation

Based on our “safety first” policy, we aim to create healthy and safe workplaces and eliminate occupational accidents. At the same time, we will remind employees of the group, as well as external people engaged in the group's business activities, of the importance of ensuring compliance and quality, to ensure smooth business activities.

At the NLM Group, we regard our human resources as our assets. Because human assets are the foundation of our business operations, we will strive to develop and retain human assets by being proactive in

promoting flexible workstyles and improving the workplace environment. Moreover, through further promotion of diversification of human assets and workstyle reform, we will strive to enable every employee to demonstrate his or her full potential, taking responsibility for and pride in his or her work. We will also vigorously invest resources in safety and environmental measures and labor savings, besides awareness raising and education and training, in order to achieve sustainable growth and co-existence with society.

## 2. Financial policy and shareholders return

Our basic policy on the distribution of profits is to pay dividends to shareholders, taking into consideration consolidated financial results and other factors in a comprehensive manner from a medium- to long-term perspective while strengthening financial position and management foundation. We use the total return ratio\* including share buybacks as the indicator for profit distribution and determine the amount of dividend to achieve a total return ratio of approximately 30%.

Moreover, we will secure internal reserve to prepare for business development for the future, including reinforcement of the management foundation, R&D, and human asset development, in addition to making investments to expand business in growth fields and for stimulating demand and expanding the earnings power in the infrastructure business field, so as to enhance corporate value.

Note: Total return ratio in fiscal year n (%) =  

$$\frac{(\text{Total amount of dividend paid in fiscal year n}) + (\text{total amount of share buybacks in fiscal year n} + 1)}{\text{Profit attributable to owners of parent in fiscal year n}}$$

## 3. Numerical targets

(billion yen)

	FY2018 (Results)	FY2019 (Forecasts)	FY2021 (Targets under MTMP2019)
Net sales	500.5	510.0	540.0
Operating profit	30.1	31.0	37.5
Ordinary profit	31.1	30.5	37.0
Profit attributable to owners of parent	20.6	20.0	24.0
ROCE(%)	10.8	10.3	11.4

NLM Group's CSR promotion system

At the NLM Group, the CSR Committee, which is chaired by the president and CEO and consists of group company presidents and officers in charge of operating their respective businesses, meets two times a year. The CSR Committee discusses important CSR-related issues such as SDGs and climate change. The NLM Group's CSR activities are carried out based on the CSR promotion plan adopted by the CSR Committee. In addition, members from related departments gather for monthly CSR meetings, where they check the progress of the CSR promotion plan and take other initiatives in cooperation with the CSR Committee. Further, issues discovered through the initiatives are reported to the Board of Directors of Nippon Light Metal Holdings two times a year and as necessary.

Each group company and segment of the NLM Group assigns a CSR Leader and a CSR Promoter, who are responsible for overseeing and promoting CSR activities. CSR Leaders and CSR Promoters carry out their own CSR activities by communicating with stakeholders in the business of each company or segment. This has resulted in the creation of some products in response to social need.



NEQRES® quakeproof ceilings were developed after the Great East Japan Earthquake. None of the ceilings fell during the 2016 Kumamoto earthquakes.

Materials selection issues and response to climate change risks and opportunities

At the NLM Group, we have begun to select material issues that we must resolve to continue growing as a sustainable, groundbreaking innovator of aluminum and beyond. For the MTMP2019, we tentatively selected *safety*, *quality*, and *the environment*, which are the three core elements of manufacturing, as our material issues.

*Safety* includes employee safety, product and service safety, business continuity safety, including that of our business partners, safe town development, and the safety of food and healthcare.

*Quality* means product and service quality. We will observe quality standards and ensure compliance.

*The environment* refers to the reduction of the environmental impact of our business activities and our supply chain, including the mining and smelting process, and contributions to society enabled by aluminum products that are lightweight and strong.

Globally, business enterprises are expected to handle climate change risks and opportunities and contribute to achieving SDGs. As mentioned in the Message from the CEO, aluminum involves both risks and opportunities concerning the climate change problem. We will have sincere discussions with stakeholders about what we should do to reduce the risks, to make use of the opportunities for business expansion, and to achieve the group's growth.



A page from the presentation material for the Nippon Light Metal Holdings mid-term management plan

Formulation of a mid-term CSR promotion plan

In February 2019, the NLM Group adopted a mid-term CSR promotion plan at the 16<sup>th</sup> CSR Committee meeting. This plan differs from previous ones in the following four major points.

First, while the plan was renewed every year before, the latest plan was formulated as a three-year plan starting in FY2019, just like the mid-term management plan. As a result, major issues are also included in the targets of the plan.

Second, while previous plans focused on risk mitigation, the latest plan also includes initiatives for opportunities. This reflects the fact that initiatives for tackling risks have been enhanced sufficiently, and also our intention to focus our efforts on initiatives taken through our businesses, which is what CSR activities should be under normal circumstances.

Third, we set What We Want to Be in 2030. We clarified what we should do now by imagining the future, or what we want to be ten years from now.

Finally, we reorganized initiatives on a stakeholder-by-stakeholder basis, as they were previously classified into categories such as the environment and quality. This reflects our belief that we should include dialogue with stakeholders in the process of solving these issues.



A CSR Committee meeting

Mid-term CSR promotion plan of the NLM Group (2019 to 2021)

		What We Want to Be (in 2030)	Mid-term plan (FY2019 to FY2021)
E	The environment	<ul style="list-style-type: none"><li>Excellent environmentally friendly products and services are provided to society.</li><li>Environmental activities aimed for sustainable society are making progress.</li></ul>	<ul style="list-style-type: none"><li>Environmental risks are managed.</li><li>Environmental human assets are developed in a well-planned manner.</li><li>Communications about environmental issues are made properly.</li><li>Activities for achieving SDGs are carried out under the ISO 14001 management system.</li></ul>
	Customers	<ul style="list-style-type: none"><li>Products and services with consistently high quality are provided.</li><li>Customer needs are identified accurately, and products and services which are better than what they need are provided.</li></ul>	<ul style="list-style-type: none"><li>Build a quality assurance system in each one of the phases from product/service development to commercial production.</li><li>Reinforce the system for managing products which are regulated by laws and regulations.</li><li>Build quality assurance systems for overseas production bases.</li><li>Improve the capabilities of quality control/quality assurance staff.</li></ul>
	Business partners	<ul style="list-style-type: none"><li>Products and services are procured at the lowest sustainable costs.</li><li>Products and services with the highest sustainable quality are procured.</li><li>Necessary amount of products and services are procured at all times.</li><li>Doors are always open to suppliers.</li><li>Good communications with suppliers have been established.</li><li>Risks of business suspension are cooperatively addressed.</li><li>Products and services with low environmental impact are procured.</li><li>Procurement is made in consideration of human rights.</li></ul>	<ul style="list-style-type: none"><li>Promote mutual understanding with suppliers.</li><li>Identify and address risks of business suspension.</li><li>Assess environmental impact and adopt highly-evaluated products and services.</li><li>Assess human rights risks and adopt highly-evaluated products and services.</li></ul>
	Employees	<p><b>Safety</b></p> <ul style="list-style-type: none"><li>All the company's workplaces are free of workplace injuries.</li><li>All the company's workplaces allow employees to work with good physical and mental health.</li></ul> <p><b>Labor practices</b></p> <ul style="list-style-type: none"><li>The company allows its employees to work with vigor and enthusiasm, find their jobs rewarding, and feel their own development.</li><li>The company allows its employees to feel that they are contributing to society and take pride in themselves.</li><li>The company evaluates, praises, and appreciates employees' contributions in a fair manner.</li><li>The company takes advantage of diversity without discrimination based on gender, nationality, age, or any other attributes.</li><li>The company is free of harassment, and its employees are considerate of each other.</li><li>The company allows its employees to choose diverse workstyles to keep a good work-life balance.</li></ul>	<p><b>Safety</b></p> <ul style="list-style-type: none"><li>Improve the level of each activity to eliminating workplace injuries.</li><li>Make sure that no employee is absent from work due to a mental health problem.</li></ul> <p><b>Labor practices</b></p> <ul style="list-style-type: none"><li>Promote employment and active participation of diverse human assets.</li><li>Promote work-life balance based on workstyle reform.</li></ul>
S	Local communities and society	<ul style="list-style-type: none"><li>The company is popular within local communities.</li><li>The company contributes to the development of local communities and is needed by them.</li><li>The company attracts excellent local human assets.</li></ul>	<ul style="list-style-type: none"><li>Continue to develop communication with local communities.</li><li>Establish a corporate brand in local communities through appropriate distribution and return of profits to them.</li><li>Maintain and improve local biodiversity.</li><li>Play an active role in developing local manufacturing human assets.</li></ul>
	Shareholders and investors	<ul style="list-style-type: none"><li>Shareholders' and investors' understanding of the company has been deepened, and the company's shares are managed and held by them for the long-term.</li></ul>	<ul style="list-style-type: none"><li>Disclose information demanded by investors on a timely basis and promote their understanding of the company.</li><li>Communicate the appeal of Team NLM by employing diverse methods in addition to disclosing financial information.</li></ul>



# Building a sustainable society with aluminum



## 1 Contributing to building a sustainable society with aluminum

### Making aluminum materials sustainable



Used in various forms in our everyday life, aluminum products have spread to every corner of society. However, the materials for aluminum products are made through a process that starts from the mining of bauxite, the raw material for aluminum, and includes the smelting process, which requires a large amount of electricity. On the other hand, used aluminum products are recycled and made into products again.

At the NLM Group, we are striving to minimize the environmental impact of our activities while improving the value of our products.

#### 1 Aluminum as an abundant resource

Aluminum is the third most abundant element in the Earth's crust after oxygen and silicon and the most abundant among metallic elements existing in the ground<sup>\*1</sup>. It is also said that there is 50 to 75 billion tons<sup>\*2</sup> of bauxite. This is equal to 12.5 to 20 billion tons of aluminum. There exists a sufficient supply of aluminum compared to the global aluminum consumption of approx. 60.0 million tons/ year (excluding recycled aluminum)<sup>\*3</sup>.

<sup>\*1</sup> Source: *Handbook of Chemistry: Applied Chemistry, 5th ed.* (Edited by the Chemical Society of Japan/ Published by Maruzen)

<sup>\*2</sup> Source: Data from U.S. Geological Survey 2007 (USGS)

<sup>\*3</sup> Source: JOGMEC, *Mineral Resource Material Flow 2017*

#### 2 Risks of using aluminum

Many bauxite ore deposits exist in tropical rainforests and areas that used to be tropical rain forests. Because native forests are cleared in areas where bauxite is mined, use of aluminum carries the risk of reducing forest resources.

In addition, a large amount of electricity is consumed in the process of smelting aluminum. Approx. 9.2 tons<sup>\*4</sup> of CO<sub>2</sub> is emitted to produce 1 ton of aluminum.

<sup>\*4</sup> Source: Japan Aluminium Association, *Tei-tanso Shakai Jikkō Keikaku* (Action plan for building a low-carbon society)

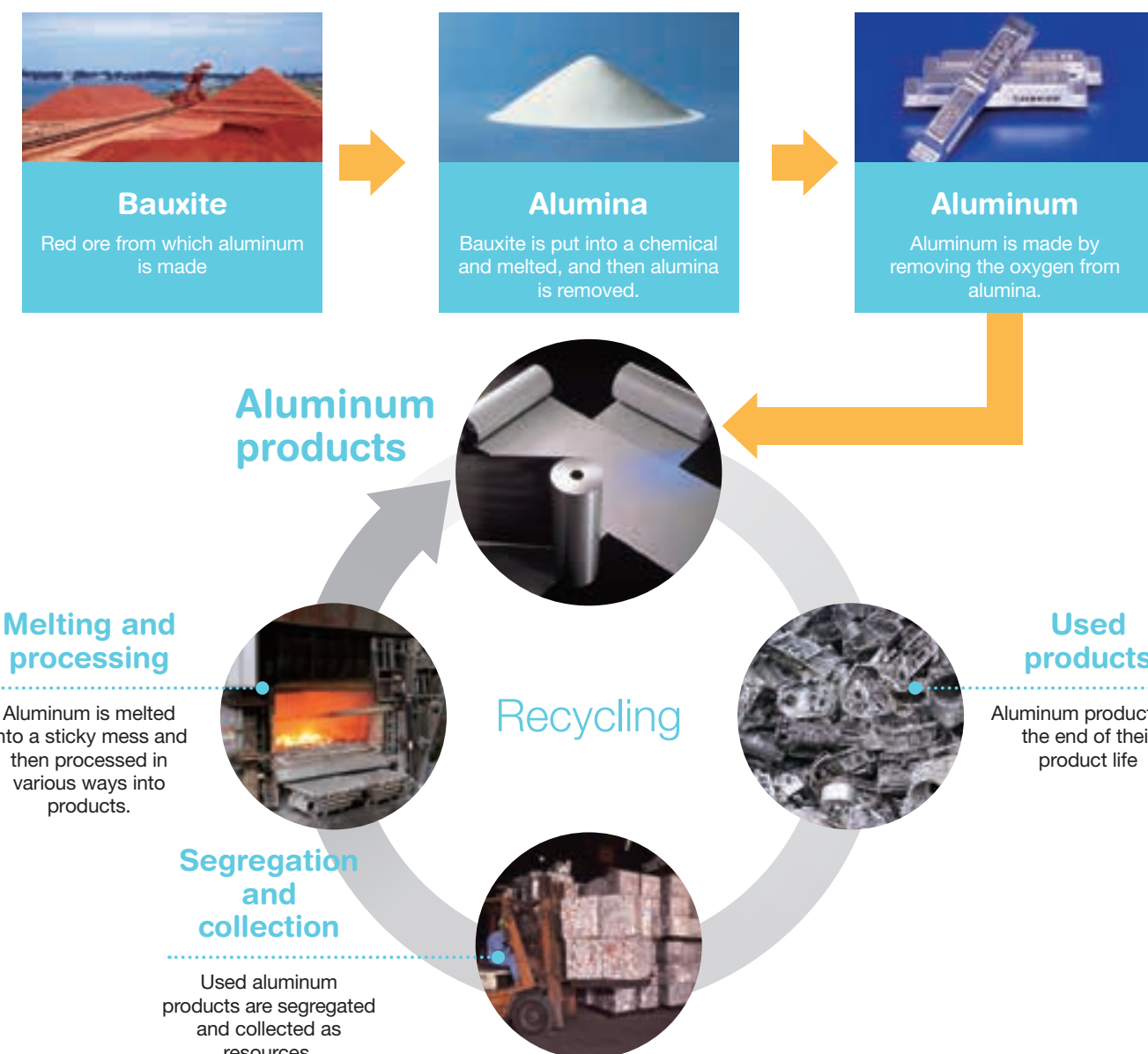
#### 3 Benefits of using aluminum

Aluminum products are used in a diverse range of fields. The use of aluminum enables the manufacture of lightweight transportation equipment such as automobiles, trucks, and railway vehicles, which ensures high fuel efficiency and low CO<sub>2</sub> emissions from use of such equipment. In addition, aluminum foil packages enable us to sustain the quality of food and drugs for extended periods.

Further, aluminum is resistant to corrosion, contributing to the extended service lives of houses, office buildings, and other buildings, as well as structures such as bridges. Aluminum also features superior recyclability. It can be used again and again just by melting it. Recycling aluminum requires only 3% of the energy needed to produce new aluminum. This means that the more recycled aluminum is used, the less new aluminum needs to be produced through the smelting process, which emits a large amount of CO<sub>2</sub>.

#### Building a sustainable society with aluminum

Aluminum products have been used widely in society because of the benefits of their use, such as enabling lightweight transportation equipment and lengthening the service life of buildings. On the other hand, the process of manufacturing aluminum products involves the destruction of nature and the emission of large quantities of CO<sub>2</sub>. The NLM Group understands both of these aspects of the material and works to improve the value of its products and reduce their environmental impact, to continue to contribute to building a sustainable society.



## 2 Helping to build a sustainable society through recycling

The group also recycles scrap special alloys as valuable resources.



Nippon Light Metal Co., Ltd. exports special alloys cast at its Kambara Complex to Thailand in the form of coiled plates. In Thailand, the alloy plates are rolled at Nikkei Siam Aluminium Ltd., a group company, and sold locally as a material for automotive heat exchanger fins.

At Nikkei Siam Aluminium Ltd., scrap is generated in the processing. However, because it contains special elements, it was not possible for them to convert the scrap into any other material. Scrap is normally recycled back to the original material, which is environmentally friendly because the addition of new elements or the use of new aluminum ingots is not required. In the case of Nikkei Siam Aluminium, however, sending the scrap back to the Kambara Complex without changing its form had a cost problem attributed to low loading efficiency. Therefore, the company built a system in which the scrap is cast into slabs sized to ensure high transportation efficiency and sent back to the Kambara Complex in Japan for recycling. The company began these operations in 2017. At present, around 100 tons of scrap is recycled in this system every month, enabling Nikkei Siam Aluminium to reduce its annual CO<sub>2</sub> emissions by approx. 10,000 tons (an estimate by Nippon Light Metal Co., Ltd.).



Slabs delivered to the Kambara Complex from Thailand

### Interview with a procurement manager at Nikkei Siam Aluminium Ltd.

**Q** Could you tell us the challenges you faced and the creative measures you devised in building this system?

**A** We faced two problems in the process of building the system.

First, we went through a trial and error process to determine the size of the slabs into which the scrap was to be cast. We had to ensure high efficiency in loading the slabs into containers while also optimizing the size of the casting equipment.

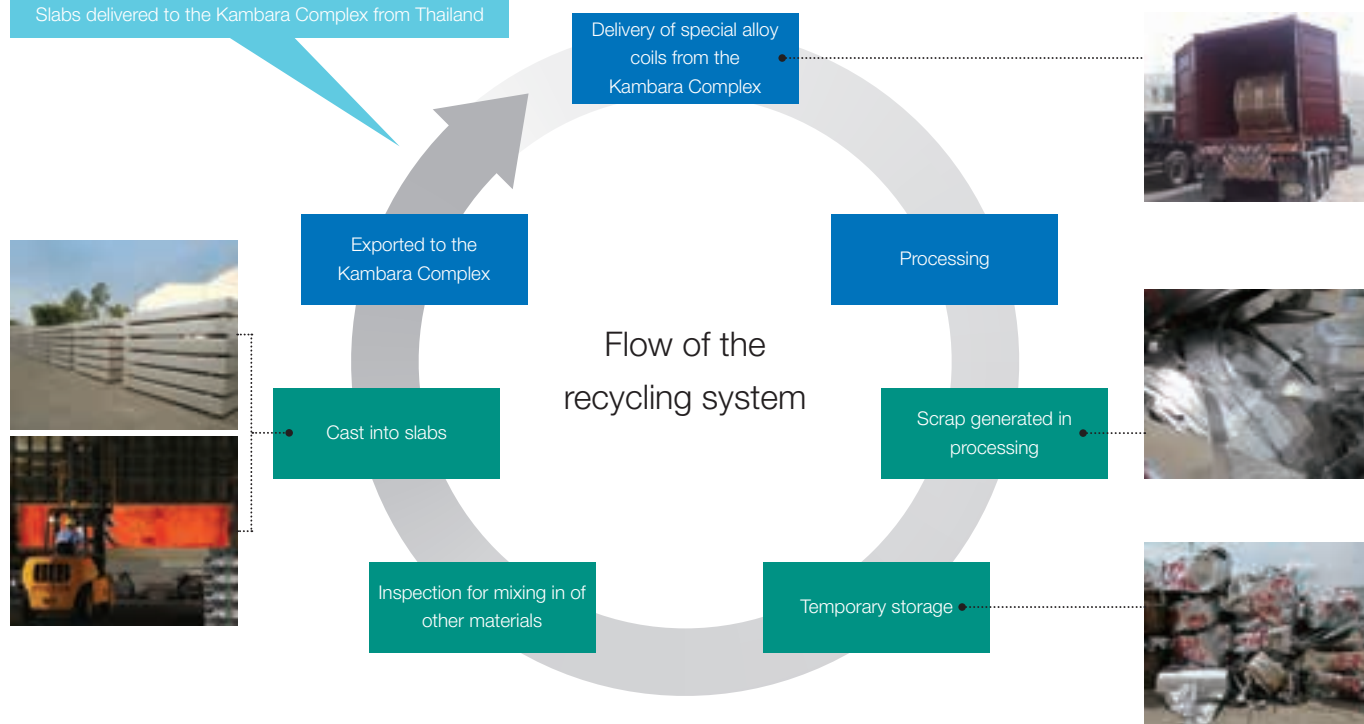
The second problem was the mixing of other scrap materials into the casting, which resulted in non-standard slabs. To prevent this, we managed the scrap so that other materials would not be mixed in before the scrap is put into the furnace. We also measured the composition of the scrap before casting it. We introduced a compact measuring instrument for this purpose.

We are delighted that we were able to solve these problems and build a system that has allowed us to reduce inventory and also cut costs.



Ms. Sumontha

Assistant Manager  
Procurement Department  
Nikkei Siam Aluminium Ltd.



### We aim to build a new recycling system (horizontal recycling of aluminum vehicles).



Aluminum scrap can be melted and recycled easily because the melting point of aluminum is low. Ideally, a material should be recycled into the same product, as in the case of the can-to-can recycling. This is called horizontal recycling. In the majority of cases, however, a material is not necessarily recycled into the same product because of quality or other issues, including the mixing in of other materials or metals, such as iron, in the distribution process. For example, aluminum window scrap, generated in housing demolition, cannot be recycled straight into aluminum window material because it has non-aluminum components, such as wire screens and screws. However, it is not easy to remove wire screens and screws, segregate them, and transport the aluminum parts to a recycling plant without mixing them with other materials. Therefore, the scrap becomes degraded, and its applications are narrowed every time it is recycled.

In response to this problem, at the NLM Group, we have made horizontal recycling a development theme at the Nikkei Research and Development Center, our R&D base. We are studying horizontal recycling from a number of perspectives, including methods of sorting scrap, methods of removing impurities from melted aluminum, and product design that ensures easy dismantling and disassembly. As part of these initiatives, we are working on a project to enable horizontal recycling of aluminum railway vehicles jointly with the New Energy and Industrial

Technology Development Organization (NEDO) and the Japan Aluminium Association. We have dismantled a railway vehicle, quickly analyzed and sorted scrap from the vehicle, melted the scrap thus acquired, and produced an extruded railway vehicle material.



A system for horizontal recycling of aluminum railway vehicles that we aim to build

### We even use aluminum residue (aluminum dross).



When aluminum is melted, an oxide containing aluminum forms on the melted aluminum. It reacts with air and becomes aluminum dross. Aluminum dross is just like the floating scum formed when cooking soup or stew. Aluminum remains in the aluminum dross, so it is squeezed out by a recovery unit. The residue that would otherwise be disposed of in a landfill can be used as a deoxidizing\* material for iron and steel. When added to melted iron, processed aluminum dross contributes to improving yield and energy efficiency in addition to controlling composition.

Nikkei Sangyo Co., Ltd. collects approx. 5,400 tons per year of aluminum dross generated within the NLM Group. We thus operate a sustainable business, in which we use all of our aluminum by making effective use of residue generated in the manufacturing process, thereby eliminating industrial waste to be disposed in landfills and also improving the productivity of iron and steel.

\* Deoxidizing means removing oxygen.



An electric furnace



Dross taken out of the furnace

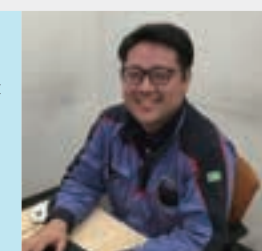
### A Message from a Customer

At our Chita Plant, we produce 140,000 to 150,000 tons of specialty steel every month. After melting iron scrap in an electric furnace, we coarsely adjust its composition by deoxidizing and desulfurizing the scrap and adding alloys to it in the ladle refining process, and then use degassing equipment to remove hydrogen and other gas components. We use around 350 tons of aluminum dross every month in the process of melting iron in the electric furnace and the ladle refining process. In the electric furnace, the use of aluminum dross, which features high heat efficiency, leads to higher yield and reduction of electricity consumption. We also use aluminum dross to control the slag\* composition, which is essential for efficient ladle refining. High cost efficiency is another appeal of aluminum dross. We have been using aluminum dross for approx. 35 years, and we would like to continue using it.

\* Slag: A by-product generated when a metal is smelted from ores

Mr. Ryota Mauchi

Steelmaking Office, Chita Plant  
Daido Steel Co., Ltd.





# 3 Contributing to sustainable transportation

## We contribute to reducing energy consumption by developing high-capacity trucks

In Thailand, the retail market has continued to expand with that country's economic growth. Above all, convenience stores enjoy growing demand due to the increase of the busy urban population, and the number of stores has been increasing rapidly. As in Japan, products are delivered to convenience stores by truck. Unlike Japan, products are delivered not by large 4-ton or 8-ton vehicles, but mostly by small pickup trucks.

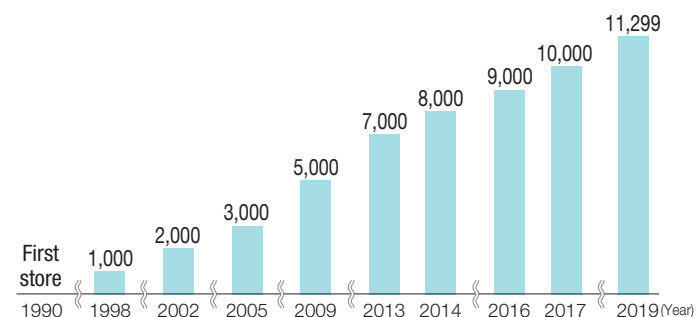
While the number of vehicles owned is increasing rapidly in Thailand, infrastructure development is not keeping pace with the increase, resulting in chronic traffic congestion, mainly in city centers. To help address these traffic jams, a ban on the entry of cargo vehicles into Bangkok's city center during peak hours was introduced in the 1990s. In Bangkok, vehicles weighing more than 2.2 tons are not allowed to enter the city center from 6:00 to 9:00 or from 16:00 to 20:00. This is why pickup trucks, which are not subject to the ban, are used for the deliveries.

However, because pickup trucks can only carry 1 ton of cargo, delivery frequency had to increase to meet the growing demand for product transportation. This exacerbated traffic congestion, and there is strong demand for a vehicle which can carry more cargo than a pickup truck.

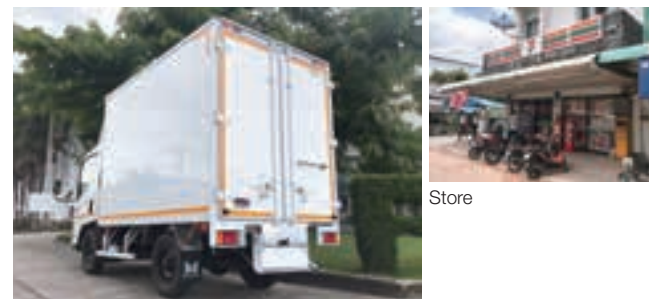
In response, Fruehauf Mahajak Co., Ltd. developed and released KaruBo, a lightweight dry van body for trucks. Designed for 2-ton trucks, KaruBo trucks aren't subject to the ban, permitting them to deliver to the city center 24 hours a day. With a cargo volume 1.4 times larger than a pickup truck, and able to carry 2.9 times the weight, KaruBo reduces the frequency of deliveries. In recognition of this benefit, 7-Eleven has adopted

KaruBo for its vehicles delivering products to the city center of Bangkok.

### Number of 7-Eleven stores in Thailand



Source: Data from CP All Public Company Limited



KaruBo, the lightweight dry van body

### Message from Development Personnel

In recent years, air pollution has been growing more serious in Bangkok, and the number of days with high amounts of fine particulate matter (PM2.5) has increased. I feel that many people have become aware of the importance of environmental protection. The Government of Thailand has formulated measures for protecting the environment. It will tighten regulations on automobile exhaust gases and vehicle loads. We believe that we will see an increase in truck bodies that are lighter but stronger than ever.

The greatest benefit of KaruBo is that it is half the weight of conventional bodies of the same size while being just as strong. We will continue to deliver products like KaruBo, which enables energy conservation.



Mr. Yuta Oyanagi  
Deputy Manager  
Design Department  
Fruehauf Mahajak Co., Ltd.

### A Message from a Customer

Fruehauf Mahajak Co., Ltd. responds promptly and suggests new solutions to problems. KaruBo is stronger than other manufacturer's vehicle bodies while the white panels look clean and are believed to give people a good impression of CP All. I hope that we can continue to communicate closely with the company.

We will unify our distribution standards. We will reduce exhaust gas emissions by using truck loading platforms with a larger capacity, thereby reducing the frequency of transportation. We will also take other initiatives, such as the introduction of electric vehicles, in pursuit of higher distribution efficiency, greater environmental protection, and a larger contribution to society.



Mr. Sumathe Numtong  
(second from left)  
Assistant General Manager  
Logistics Department  
CP All Public Company Limited  
(the company operating 7-Eleven stores in Thailand)

## We will contribute to the development of lightweight electric vehicles with aluminum busbars.



An aluminum busbar

Electric and hybrid vehicles, which are increasing in popularity across the globe, use large metallic electrical conductors called busbars for high current power distribution. Busbars are housed inside parts such as batteries, inverters, converters, and capacitors, and between parts, to carry current.

Most busbars currently used are copper because copper provides a stable flow of current. However, copper has a shortcoming. Because of its high specific gravity, copper makes the vehicle heavy.

Further, electric vehicles use large batteries and other large electrical devices to extend driving range. These make vehicle bodies heavier, making it difficult to extend driving range, which is a shortcoming of those vehicles.

In response, Nippon Light Metal Co., Ltd. has developed an aluminum busbar for vehicles. Aluminum busbars had implementation issues, including their vulnerability to oxidation. We overcame the issues by developing a special plating material that prevents oxidation.

The weight of aluminum is about one-third that of copper. The weight of an aluminum busbar is about half that of a copper busbar needed to carry the same amount of current.

High expectations are placed on aluminum busbars ability to enable the development of lighter electric vehicles.

### Message from a Person in Charge

Busbars used most commonly were large ones, used for power plants or for factories which consume a lot of electricity. We thought that smaller-sized busbars could be applied in electric vehicles, which are gaining in popularity, which is why we developed the PPAB aluminum busbar. Because it is lightweight, it contributes to the reduction the environmental impact of vehicles which use it.

Taking advantage of these features, we will develop diverse aluminum products, including products for electric vehicles.



Mr. Akihito Yoshida  
Electric Material Processing  
Business Unit  
Rolled Products Division  
Nippon Light Metal Co., Ltd.

## We will reduce CO<sub>2</sub> emissions with home delivery boxes.

The number of parcels handled by couriers is increasing rapidly due to the spread of online shopping in recent years. In addition, the high frequency of redelivery has increased the burden on drivers, which has become a social problem. The development of new systems and infrastructure is needed to improve the efficiency of home delivery without losing the convenience for users.

Toyo Rikagaku Kenkyusho Co., Ltd. manufactures mailboxes. Recently, mailboxes have been upsized to accommodate parcels, but they are not large enough for large parcels. Therefore, development of a home delivery box, which is large enough to receive large parcels while the user is away from home, had been demanded. In the development of this home delivery box, we faced various challenges because security needs to be ensured and the product will be installed by the front door, and therefore importance is attached to its design and size. However, we were able to develop a product with the functionality and aesthetics demanded by customers.

If this home delivery box is used all over Japan, the wasted labor caused by redelivery will be reduced. We believe that it will lead to reduction of the burden on drivers and environmental impact, contributing to sustainable logistics.

### Amount of CO<sub>2</sub> emitted from trucks traveling for redeliveries

Impact on CO <sub>2</sub> emissions		Extra 420,000 tons emitted every year							
3.6 billion parcels	x	0.58km/parcel	x	25%	x	1t	x	0.8kg-CO <sub>2</sub> /t-km	= 420,000 t CO <sub>2</sub>
Number of parcels handled by couriers (FY2014)		Distance traveled by a courier per parcel (excluding arterial transportation)		Redelivery rate		The average load assumed to be 1 ton		CO <sub>2</sub> emission intensity of compact vehicles used for delivery	

Impact on labor productivity		Labor equivalent to approx. 180 million hours per year and 90,000 workers* are consumed for redeliveries.	
3.6 million parcels x (970,000 times / 4.1 million parcels) x 0.22 hours x 180 million hours/year = Labor equivalent to 90,000 workers*			
Number of parcels handled by couriers (FY2014)	Total number of times of delivery to absent recipient (FY2014)	Total number of cargoes	Hours worked for delivering one parcel
		* Based on the assumption that the average workday is 8 hours and number of days worked per year is 250.	

\* Based on the assumption that the average workday is 8 hours and number of days worked per year is 250.

Source: Ministry of Land, Infrastructure, Transport and Tourism (2015), Report of examination of the promotion of the diversification of methods for receiving home delivery parcels aimed at reducing redeliveries



A home delivery box

### A Message from a Customer

We began to outsource the manufacturing of sheet-metal products to Toyo Rikagaku Kenkyusho Co., Ltd. about 35 years ago. The company has since been supplying high-quality products to us stably with integrated production.

A home delivery box is a kind of locker that can secure delivered parcels for the resident. Because it saves the trouble of having to redeliver parcels or wait for their delivery, it is highly appreciated in this era of online shopping and is attracting attention again in the market.

Home delivery boxes have been defined as equipment for reducing burden of housework under the government's point program for promoting and supporting the acquisition of next-generation homes that are energy-saving, quake-resistant, and/or barrier-free, and/or contribute to reducing burden of housework. We therefore expect the further growth of demand for home delivery boxes.



Mr. Atsushi Yabe  
General Manager,  
Technology  
Development Division  
Tajima Metal Work Co., Ltd.



# 4 Contributing to building a sustainable living environment

## We deliver electric power safely.

Aluminium Wire Rod Co., Ltd. manufactures aluminum wires used for power transmission lines, with a domestic market share exceeding 50%. There are two types of power transmission lines, one made of copper and one made of aluminum, each with its own advantages. Copper power transmission lines feature high conductivity and therefore are capable of transmitting more electricity than aluminum ones. Aluminum lines have lower conductivity than copper ones. However, they are lighter in weight than copper lines and therefore are less burdensome to the power poles and steel towers supporting them, allowing them to be used longer than ones supporting copper cables. In addition, aluminum is an accessible material because its price is stable and lower than the copper.

Reflecting these advantages of aluminum, many of the power transmission lines in Japan that were installed in or before the 1960s and are now being overhauled are being replaced with aluminum lines.

In addition, Aluminium Wire Rod Co., Ltd. recycles aluminum power transmission lines that have been replaced during overhauls.



Wire rod for overhead electric lines  
(Φ 9.5mm, a 2-ton coil)



Overhead electric lines and a steel tower

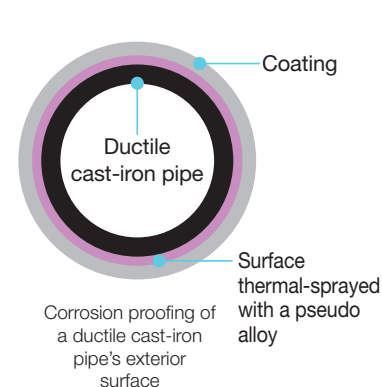


## We deliver water safely.

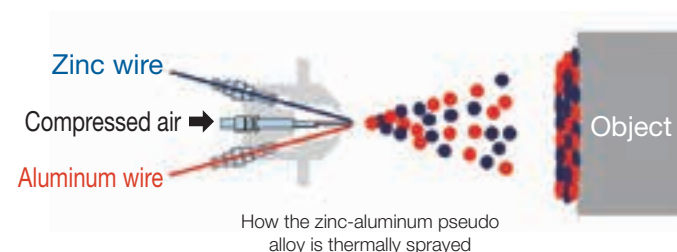
The water we use every day is supplied by water pipes. Many water pipes were installed more than 50 years ago, and some aging pipes have corroded. The corrosion will eventually cause water leakage or a water outage resulting from the leakage. In addition, a major earthquake may lead to large-scale damage of the water pipe networks. This is likely to cause a prolonged water outage and serious damage to people's lives.

Nippon Light Metal Co., Ltd. and Nikkei Sangyo Co., Ltd. have developed an aluminum alloy thermal spraying wire jointly with Kurimoto, Ltd. This product is a metallic coating that prevents the corrosion of water pipes. Different metals (aluminum and zinc) are sprayed onto the pipe at the same time to create a thermal spray coating that is resistant to corrosion. The coating permits water pipes to be used for more than 100 years\*.

\* An estimate calculated by Japan Ductile Iron Pipe Association based on the results of a survey of actual products and those of a laboratory experiment.



Ductile cast-iron water pipe



How the zinc-aluminum pseudo alloy is thermally sprayed

### Message from Development Personnel

I was in charge of suggesting and assessing the alloy's composition for the aluminum alloy thermal spraying wire. We obtained many unexpected results and had great difficulty determining the composition. However, as a result of tenacious efforts, we successfully developed a thermal spraying wire with excellent durability. We will continue striving to develop products that will contribute to building sustainable social infrastructure.



Mr. Akira Kaneko  
Surface Innovation Group  
Nikkei Research & Development Center  
Nippon Light Metal Co., Ltd.



## We will extend the service life of buildings and promote the development of towns where we can continue to live for a long time.



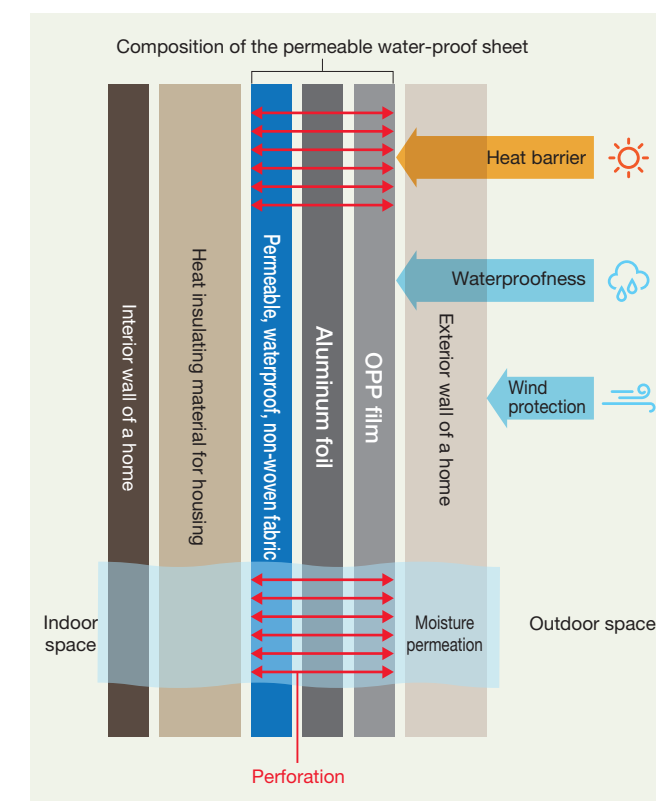
Waterproof sheets using vapor-deposited aluminum films are commonly used for exterior walls of houses. However, the aluminum part of a vapor-deposited aluminum film is oxidized and degraded mainly by humidity, which had made it impossible to obtain sufficient durability. In response, Toyo Aluminium K.K. developed the Toyal Thermo Reflector that takes advantage of aluminum foil's properties.

This product uses perforated aluminum foil, which not only makes it water-proof, permeable, and breathable but also keeps this permeable water-proof sheet reflective to infrared for a long time.

In summer, the Toyal Thermo Reflector maintains room temperature from rising by reflecting radiation heat (infrared) from the outside. In winter, the product keeps the room temperature from declining by reflecting heat radiation from indoor heaters.



Toyal Thermo Reflector



Cross-section of a residential exterior wall using the Toyal Thermo Reflector (for illustrative purposes only)

## We will further the spread of sustainable solar power generation



The growing demand for renewable energy has led to the rapid spread of solar power generation systems, both for industrial and consumer use, as a key part of efforts to meet the demand for sustainable energy.

The NLM Group provides a wide variety of products related to solar power generation, including an aluminum solar panel frame (ALSOL®), ceramic materials for solar cells, and materials for solar cells such as a back sheet (ToyalSolar®) and aluminum paste (ALSOLAR®). Toyo Aluminium K.K. developed the Hane® Module, a compact, lightweight solar cell module aimed at accelerating the spread of solar power generation further. The company succeeded in reducing the weight of this module by half compared to conventional modules. This enables the Hane® Module to be installed in various places where installation of a module was previously difficult, due to the load capacity of buildings, such as factory roofs, warehouse roofs, wall surfaces of buildings and large-scale facilities, parking areas, paths, bus stops, taxi stands, roofed rest areas in parks, and coin-operated parking lots. Further, used with ENESTAND® (a solar car port), Hane® Modules contribute to the spread of the charging infrastructure for electric vehicles.



ENESTAND® is a registered trademark of Sky Japan Corporation.



# 5 Contributing to building a sustainable future

## Wishing to reduce traffic accidents

Most center dividers of temporary two-lane sections, which constitute approx. 30% of toll expressways in Japan, are rubber poles. Such sections have a high risk of accidents caused by cars crossing into the opposite lane, and these accidents are likely to be serious, keeping roads blocked for a long time.

To reduce traffic accidents in such sections of toll expressways, Sumikai Nikkei Engineering Co., Ltd. is developing a fence for dividing roads. The fence consists of two aluminum alloy beams and posts to which the beams are attached. The posts are anchored to the road with bolts.

This fence can be installed even in narrow areas because its installation width is narrow. Additionally, the height of the posts ensures good front and side visibility, giving drivers a sufficient range of vision. In addition, because its posts are designed to be

connected with bolts, the fence can be installed by humans anywhere, without using heavy machinery. Widespread use of this fence is expected to reduce accidents.

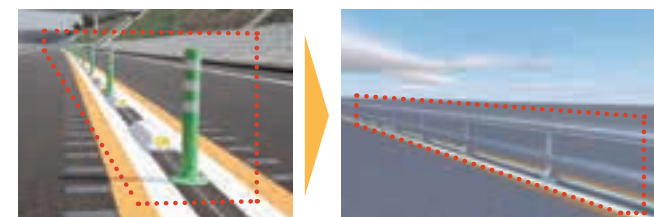
### Message from Development Personnel

In this development project, the application of our accumulated experience and technologies was not enough, and we had to think more flexibly than before. While the design of the posts, which are still too weak, and the acquisition of the asphalt's physical properties remain issues, we are proceeding with development by repeating crash tests again and again to find out asphalt's physical properties. We will continue product development to help reduce traffic accidents.



Mr. Norikazu Tomioka

Head of the New Product Development Team  
Sales Planning Division  
Sumikai-Nikkei Engineering Co., Ltd.



## Creating industrial infrastructure for the future

At the NLM Group, we are engaged in research and development of an aluminum alloy as a material for 3D printers, believing that we can make maximum use of the group's powder manufacturing technologies and rapid solidification technology.



A 3D-printed sample

### Interview with the Leader of the 3D Project

**Q** In what fields is aluminum expected to be applied as a 3D printer material?  
**A** It is expected to be applied in every industrial field. Aluminum enables 3D printing of objects in shapes that could not be reproduced with conventional processing. Moreover, the rapid solidification of objects, made by melting and sintering a powder alloy with a laser, enables unprecedented alloy characteristics. We believe that the use of alloy development technologies, for which we take advantage of the group's expertise, and other technologies will greatly expand the possibilities of aluminum to various fields. These technologies will also enable lighter weight and higher functionality than before. We believe that our efforts will contribute to society in regards to the environment, in the form of development of parts with high energy-saving abilities.

**Q** What is the hardest part of the 3D printer business?  
**A** Because 3D printing is a new technology, precedents and related literature are limited. In addition, there is no established standard. We therefore need to build everything from scratch. It is just like cultivating a vast wilderness from scratch, but I feel that's what makes it greatly rewarding.



Mr. Yasuhiro Kubota

Leader  
3D Project  
Nikkeikin Aluminium Core Technology Co., Ltd.



# Tackling the climate change problem to build a sustainable society



## Environmental management system

At the NLM Group, we fully recognize the impact that our business activities may have on the environment. We have developed an environmental policy, under which we are taking initiatives to realize sustainable businesses and a sustainable society voluntarily and proactively, beyond complying with related laws and regulations.

The NLM Group Environmental Committee deliberates and decides on the core measures related to the group's environment management. The committee is chaired by the president of Nippon Light Metal Holdings Co., Ltd., and consists of company officers, presidents of major NLM Group companies, and other members.

Matters determined by the Environmental Committee are fleshed out by the environmental control segment, which serves as the committee's secretariat, and are made known at meetings of environmental practitioners from each site\* before actions are taken.

\*Sites: Scope of application of the environmental management system

### Environmental management system



\* 47 sites of 25 companies in total (scope of environmental management in Japan)

## Environmental audits

At the NLM Group, we conduct regular environmental audits of 60 sites in Japan and other countries, separately from the ISO 14001 audits, with the environmental control segment of the group playing a leading role. Points checked in environmental audits include the status of compliance with laws and regulations, system for handling emergencies, training given at each site, and initiatives taken to preserve biodiversity.

In FY2018, we conducted environmental audits at 15 sites in Japan and seven overseas sites and pointed out 65 problems. The problems include the failure to fulfill storage standards based on the Waste Management and Public Cleansing Act and insufficient surveys on equipment containing PCBs, and corrections were made accordingly. We also discovered good practices, such as writing the planned date of the next inspection on the storage tank itself to ensure the inspection is conducted as planned, thereby preventing environmental problems. These examples were shared at meetings of environmental practitioners and applied horizontally to reduce environmental risks.



An environmental audit

## Development of environmental human assets

At the NLM Group, we run various training programs to develop environmental human assets in accordance with the nature of the work at each site.

Nikkei Logistics Co., Ltd. provides training on compliance with standards for the collection and transportation of waste, creation of industrial waste ledger sheets for and storage of entrusted waste and other practices, in addition to the legal obligations of waste generators stipulated by the Waste Management and Public Cleansing Act. In addition, Nikkei Research and Development Center provides training on how to clean up used chemicals and emergency response training for chemical leaks because a wide variety of chemicals are used in R&D and analysis operations.

Environmental training programs that are common across the group include training sessions on laws and regulations, training to develop ISO 14001 internal auditors, and participation in environmental audits. The training sessions on laws and regulations are held twice each year. In FY2018, they were held under the themes of the Soil Contamination Countermeasures Act and the Waste Management and Public Cleansing Act. We hold a training session to develop ISO 14001 internal auditors once a year, to give as many employees as possible an opportunity to look at the fields they work in from the viewpoint of environmental protection. In FY2018, 50 employees attended the session. The "participation in environmental audits" mentioned above refers to environmental practitioners participating in the environmental audits of other sites, and not just their own. This is aimed at deepening their understanding of the environment by having them learn how to walk around and look at sites, key points for identifying issues, key points of countermeasures, and other matters on site. In FY2018, there were 34 total participants while the number of environmental practitioners was 27 (rate of participation: 126%).

### Development of personnel with public qualifications related to the environment

At the NLM Group, we aim to develop human assets who can respond promptly to moves to revise environmental laws and regulations. For this purpose, we encourage our employees to obtain public certifications related to the environment, beyond fulfilling legal requirements on the number of staff members with such qualifications.

### Public qualifications related to the environment obtained by employees

Name of qualification	Number of employees who have obtained it	Legally required number of qualified employees	Cash bonus* (thousand yen)
Air	96	26	100
Water	128	28	100
Noise	51	16	50
Vibration	46	18	50
Dioxins	23	14	50
Ordinary particulates	45	4	—
Engineering manager for industrial waste treatment facilities	9	3	—
Manager in charge of specially controlled industrial waste	Waste other than infectious waste	153	32
	Infectious waste	5	4
Qualified energy manager	Heat and electricity	96	19
Certified environmental measurer	Concentration-related measurement	2	0

\* Amount paid by Nippon Light Metal Co., Ltd.





### Meetings of environmental practitioners at overseas sites

At the NLM Group, we have been holding a meeting of environmental practitioners at one of our overseas sites every year since FY2016. In FY2018, we held the meeting in Thailand (at the Pathumtani Factory of Nikkei Siam Aluminium Limited) in October, with the participation of 18 environmental practitioners from five sites, representing three companies.

In the meeting, the participants had a lively Q&A session and discussions about energy conservation and the prevention of air, water, and soil pollution. The meeting has also led to the development of a network of environmental practitioners from these sites. Environmental information is shared across the network, leading to the reduction of environmental risk.



An environmental audit in Thailand



The meeting of environmental practitioners held in Thailand

### Environmental accidents and emergency responses

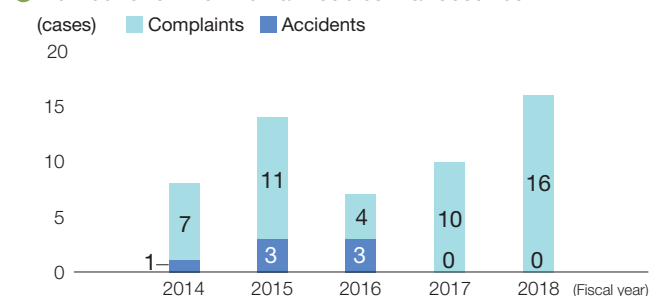
At the NLM Group, we have developed and operate a quick reporting system in Japan and overseas to respond promptly to environmental problems.

In FY2018, we received 16 environmental complaints\*<sup>1</sup> (four in Japan and 12 overseas). For each complaint, we take emergency countermeasures and institute measures to prevent recurrence, with the cooperation of the people from the site and the environmental control segment. We also reduce the risk of recurrence by extending the countermeasures to other sites in Japan and other countries that have equipment similar to that involved in the complaint.

In addition, we regularly hold environmental briefings for local residents at each site to disclose the results of the measurement of water, atmosphere, and the similar elements, explain our environmental measures, and give them a factory tour. We take these and other measures in our efforts to disclose information to people from local communities and exchange opinions proactively with them.

In FY2018, there were no lawsuits, fines, or forfeits related to the environment. We also achieved zero environmental accidents\*<sup>2</sup> for the second consecutive year.

#### Number of environmental troubles that occurred



\* Complaints: Number of complaints (about odor, noise, or the similar event) lodged by external parties

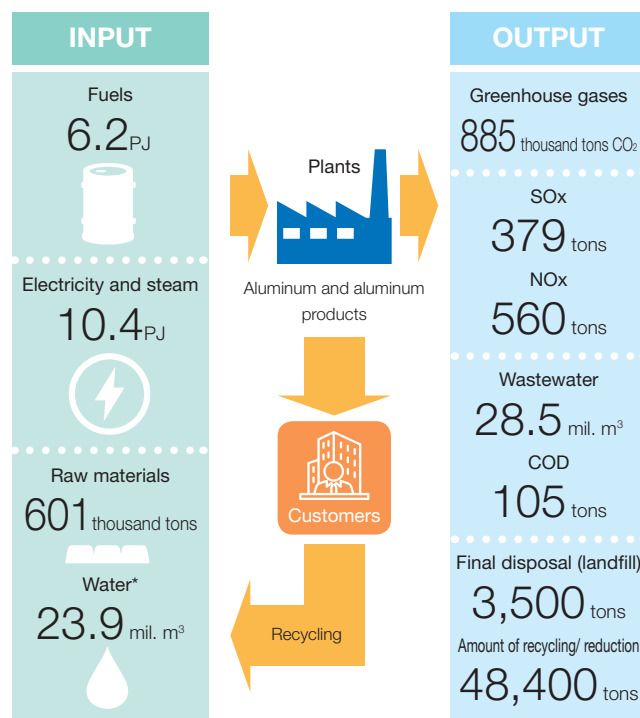
\* Accidents: Environmental issues that have an impact outside the site (such as leakage of oil or chemicals)



Local residents tour factories

(Left: Riken Light Metal Industry Co., Ltd., Right: Tokura Plant of Nikkei MC Aluminium Co., Ltd.)

### Material balance (FY2018)



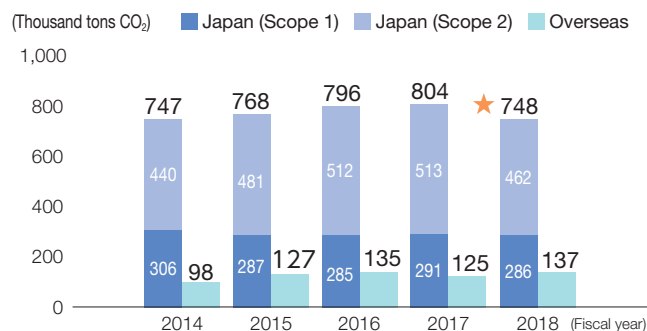
\* Water: Seawater intake is excluded.

### Initiatives for reducing greenhouse gas emissions

#### Greenhouse gas emissions from the NLM Group

Greenhouse gas emissions from the overall NLM Group decreased 43 thousand tons CO<sub>2</sub> year-on-year, to 885 thousand tons CO<sub>2</sub>. Emissions in Japan decreased 56 thousand tons CO<sub>2</sub> year-on-year, to 748 thousand tons CO<sub>2</sub> while emissions from our overseas sites increased 12 thousand tons CO<sub>2</sub> year-on-year, to 137 thousand tons CO<sub>2</sub>.

#### Greenhouse gas emissions



\* Boundary (Japan): 29 consolidated subsidiaries in Japan

\* The following CO<sub>2</sub> emission factors were used for the calculations.

Electricity: The CO<sub>2</sub> emission factor with T&D losses of each previous fiscal year announced by the Federation of Electric Power Companies of Japan and the Electric Power Council for a Low Carbon Society CO<sub>2</sub> emissions as per heat value and calorific value for each fuel, which are set forth in the Ministerial Ordinance for Calculation of Greenhouse Gas Emissions Associated with Business Activities of Specified Emitters

\* CO<sub>2</sub> emissions associated with the hydroelectric power generated at the Kambara Complex of Nippon Light Metal Co., Ltd. are calculated with the above CO<sub>2</sub> emission factor for electricity for each fiscal year.

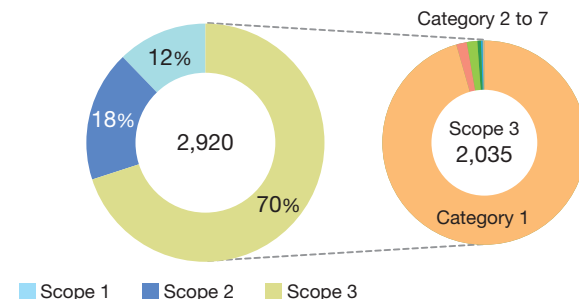
\* The target and actual values do not include emissions caused by chlorofluorocarbons and their alternative.

\* Boundary (overseas): 14 overseas consolidated subsidiaries (out of 24 in total)

\* CO<sub>2</sub> emissions from our overseas sites related to electric power were calculated by using the latest CO<sub>2</sub> emission factors of the respective countries shown in CO<sub>2</sub> Emissions from Fuel Combustion 2017 from IEA.

#### Greenhouse gas emissions including Scope 3 emissions (FY2018)

(Thousand tons-CO<sub>2</sub>)



Scope 1: Direct greenhouse gas emissions by the NLM Group

Scope 2: Indirect greenhouse gas emissions by the NLM Group attributed to the use of energy including electricity

Scope 3: Indirect greenhouse gas emissions by the NLM Group in its supply chain

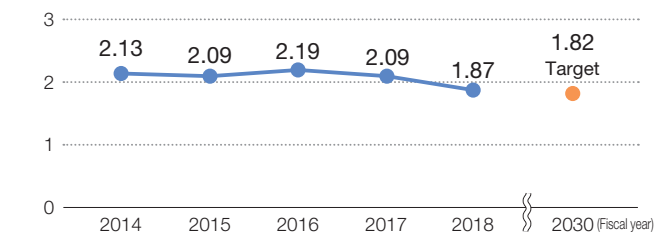
#### Reduction of greenhouse gas emissions: target and results (Japan)

The NLM Group aims to reduce the greenhouse gas emission intensity per unit of sales to 1.82 tons CO<sub>2</sub>/million yen by FY2030.

The result for FY2018 was 1.87 tons CO<sub>2</sub>/million yen. This mainly reflects our energy saving activities, a reduction of energy consumption attributed to reduction in production, and the decline of the CO<sub>2</sub> emission factor for electricity.

#### Greenhouse gas emission intensity per unit of sales (Japan)

(Tons CO<sub>2</sub>/million yen)



#### TOPIC: Introduction of a cogeneration system

The Shimizu Plant of Nippon Light Metal Co., Ltd. manufactures aluminum hydroxide and alumina, and the process demands a large amount of electricity and steam. In the past, the plant used an in-house power generator fueled by heavy oil, emitting large amounts of greenhouse gases. As a solution to this issue, we introduced a cogeneration system and began operating it in January 2019.

A cogeneration system uses an engine fueled by utility gas to generate electricity, and at the same time, generates steam and hot water using waste heat from the engine. The introduction of this system enabled us to reduce emissions by approx. 3,400 tons CO<sub>2</sub> in the six months to June. We expect it to reduce emissions by approx. 7,000 tons CO<sub>2</sub>\* for the year.

Some of the hot water from the cogeneration system is still unused, and we plan to use it for manufacturing process of other products in the future, aiming to achieve further energy use efficiency and further reduction of greenhouse gas emissions.

\* This is based on the assumption that annual operating time is 8,400 hours (350 days per year). The CO<sub>2</sub> emission factor used for the calculation is the actual CO<sub>2</sub> emissions in FY2017 (final value) that was announced by the Electric Power Council for a Low Carbon Society.



Cogeneration system

### Message from a Person in Charge

I am a part of the Motivity Section, in charge of managing the utilities of the Shimizu Plant. The introduction of a cogeneration system began to be discussed about four years ago with the goal of reducing energy costs and energy consumption. The installation work began in 2017, and we started operating the system in January 2019.

Since the system began operating, we have been exchanging opinions daily with people in the field, aiming for stable operation with optimal efficiency. We are learning a lot. All of us work hard daily with a strong sense of responsibility, aware that a problem with the cogeneration system could shut down the entire plant, and a strong sense of our mission to advance energy conservation at the Shimizu Plant.

Mr. Tatsuya Imai

Motivity Section, Equipment Department

Shimizu Plant

Nippon Light Metal Co., Ltd.



### Initiatives for efficient use of water

At the NLM Group, we take initiatives to use water efficiently.

Toyo Precision Appliance (Kunshan) Co., Ltd., located in Kunshan City, China, has drainage facilities at two plants, from which approx. 90 to 140 tons/day of water was discharged during the day time. We have reduced it to approx. 70 tons/day by expanding the reverse osmosis membrane water purifier to facilitate water recycling and by taking other initiatives. We have ensured zero water discharge at night by taking measures such as adjusting production.



Reverse osmosis membrane water purifier used at Toyo Precision Appliance



# Safety comes before anything else.

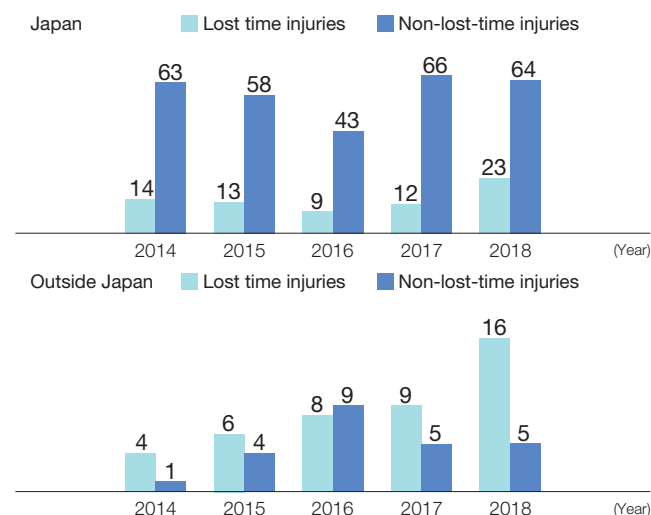


## Safety comes before anything else.

At the NLM Group, we conducted activities for safety and health in FY2018 under five policies in addition to the slogan, "Based on the recognition that safety and health form the basis of a company's existence, the overall group will make concerted efforts to ensure the safety and health of all employees and people in local communities, with labor and management working as one team, aiming to improve the level of safety and health and achieve zero workplace injury."

Despite our efforts, the number of accidents increased significantly from the previous year, both in Japan and overseas in 2018.

### Workplace injury trends



Taking this situation seriously, we reflected on our activities and suspected that our safety and health policies had become a mere façade instead of being truly instilled in employees. We simplified our basic policy on safety so that it could be easily incorporated by employees. We also revised our safety and health policies with the goal of communicating the thoughts of the top management directly to employees.

Under the basic policy, *safety comes before anything else*, all officers and employees are working as one to prevent workplace injuries.

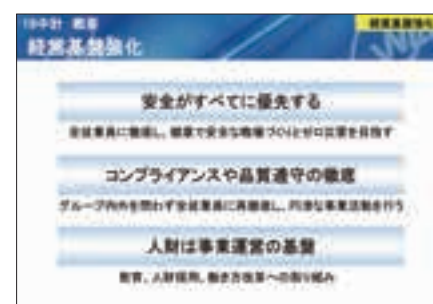
We have also translated the safety and health policies into Chinese, Thai, and English to enable them to take root at our overseas business locations. Thus, all NLM Group companies take part in safety activities.



## Positioning the safety-first principle as the basic policy of the mid-term management plan

At the NLM Group, we have positioned the safety-first principle, a measure for reinforcing our management foundation, as the basic policy of the medium-term management plan that started in FY2019 (MTMP 2019), to further clarify the group's policy, *safety comes before anything else*, and effectively communicate the top management's determination.

Human assets are the foundation of business operations, and protection of the lives and health of workers is essential for the survival of a company. All officers and employees will unerringly observe the policy that *safety comes before anything else*, of which our top managers will clearly remind us at the onset of their messages and speeches. Thus, we will create safe workplaces, thereby achieving zero accidents, in our efforts to ensure stable production activities and improve our business performance based on such activities.



A page from the Nippon Light Metal Holdings mid-term management plan presentation materials

## Training on safety and health

At the NLM Group, we position the development of human assets who promote safety activities as an important task, and we are focusing our efforts on the safety training of employees.

In FY2018, we conducted internal training, including on the safety management system, on risk assessment, and special statutory training. Believing that learning safety skills and accumulating safety knowledge is important for eliminating accidents, we are increasing human assets who can provide training and promoting human asset development.



On-site safety training

## Sharing safety information

At the NLM Group, we utilize an internal system database to provide information when a workplace injury has occurred and share detailed information about accidents and countermeasures. Using this database, which is accessible from all of the group's business locations and permits the posting of information at all locations, we share information about specific activities for preventing workplace injuries, including case examples of accidents that have occurred in the group in the past and countermeasures against them, and make use of the information to prevent accidents.

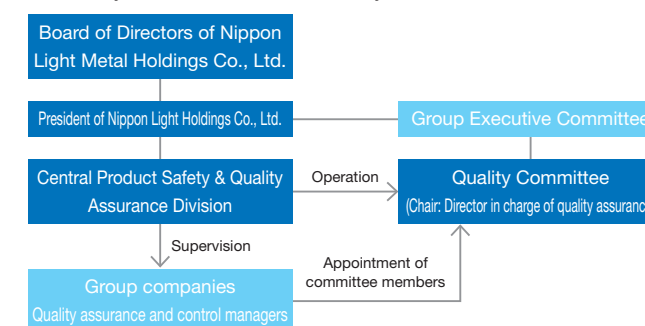
# Assuring the quality of groundbreaking products and services



At the NLM Group, we strive to maintain our quality management system appropriately to reduce quality risks and concerns. As a part of efforts to take every opportunity we can, we hold a competition on good practices in quality to share information, thereby advancing activities for adding to the NLM Group's strengths.

## Quality management system

### Quality assurance and control system



### 1 Ensuring the independence of quality assurance departments

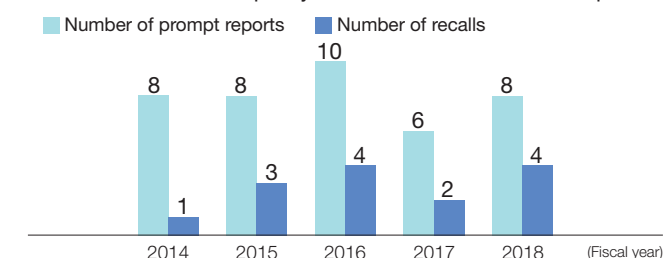
To ensure the independence of quality assurance departments, we established the Central Product Safety & Quality Assurance Division (headed by the director in charge of quality assurance) under the direct control of the president of Nippon Light Metal Holdings Co., Ltd., as an organization that directly oversees the quality assurance departments of all companies and segments.

### 2 Reporting of serious quality-related matters

At the NLM Group, in the event of a serious quality problem such as a recall or a defect that may cause physical injury, information about the problem is provided promptly to the overall group regardless of who is responsible for it.

In FY2018, eight problems were reported.

### Number of serious quality-related matters that were reported



### Content of prompt reports and recalls (FY2018)

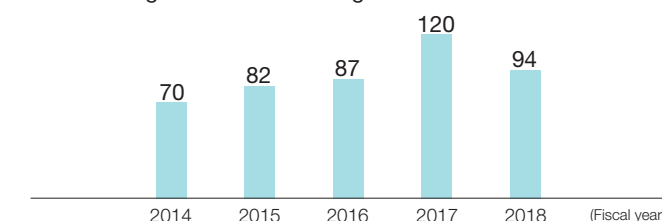
Month and year	Content of the defect	Category
September 2018	Finger cut caused by product burr	Physical injury
October 2018	Crack on a lid	Serious property damage
October 2018	Insufficient grease on parts	Possibility of a recall
October 2018	Parts welding defect	Possibility of a recall

### 3 Screening Committee Meeting that evaluates safety, quality, and conformity to laws and regulations from various perspectives

The Screening Committee Meeting meets whenever a product is launched or there is an important change, such as a change in the material or manufacturing process of a mass-produced product. Reviews are conducted again and again until the subject product or service is deemed acceptable.

The Screening Committee Meeting examines the subject from multiple perspectives to ensure compliance with laws and regulations, product safety, and conformity to quality requirements. By applying their specialized knowledge, members of the council check such points as whether the adopted purchase/ production process, cost, and inspection method enable the specifications promised to customers. If impossible specifications are identified, we improve the process or negotiate with the customer to change the specifications. If these measures do not work, declining the order is a possible option.

### Number of products and services examined by the Screening Committee Meeting



### 4 Checking the testing and measurement systems

November is quality month, and each year the NLM Group conducts full quality checks.

In FY2018, we conducted full quality checks under the theme of checking the testing and measurement systems.

### Content of the full quality checks

- Whether measuring instruments are managed and used appropriately
  - Submission of documents showing a list of all measuring instruments that have been introduced, including veneer calipers, and their locations
  - Testing and measurement procedures that have been established, and how they are implemented
- Whether measurement data are handled appropriately
  - Cross-check of data in the shipping inspection sheet with the source data

### 5 Quality assurance network

At the NLM Group, we have established a group-wide quality assurance network to further strengthen the independence of quality assurance departments. The Group Quality Committee chaired by the director in charge of quality provides information about the group's quality policies and approves quality management promotion plans. This committee also shares information about quality problems that have occurred in the group and the results of quality audits, has discussions about them, and engages in other activities for improving our quality assurance level.



6 Quality audits

We conduct quality audits of all group facilities every year to check that measures 1 to 5 continue to be implemented. These activities are aimed at sharing points needing improvement related to quality with the audited departments in question with the aim of improving the level of their quality assurance further.

In FY2018, 131 problems were pointed out and 138 suggestions were given at 66 facilities.

Good practices in quality competition

At the NLM Group, we began to hold a competition on good practices in quality in FY2018 with an aim to improve the group's quality assurance level.

In FY2018, there were 41 entries to the competition, and the Highest Award was granted to one initiative and the Award of Excellence was given to two. The competition gave group companies an opportunity to learn about various initiatives taken within the NLM Group and to share information with each other, where some plants facing challenges contacted another facility seeking details about their successful initiatives.

Highest Award



Toyo Rikagaku Kenkyusho Co., Ltd.

Quality improvement of an aluminum die-cast parts achieved in collaborations with a partner company

**Reason for the award:** In pursuit of stable delivery of good products to customers, they strived to improve product quality, without giving up, going beyond the framework of the company and working together with a partner company. As a result, they made a great achievement, which was also praised by their customers.

Award of Excellence



Nikkeikin Aluminium Core Technology Co., Ltd.

Standardization of tensile testing

**Reason for the award:** In building a tensile testing system free from human intervention, they applied the good practices of another group company and it led to an efficiency improvement.

Riken Light Metal Industry Co., Ltd.

Quicker measurement with measuring equipment and the prevention of judgment errors

**Reason for the award:** While increasing measurement points to achieve the quality required by customers, they automated a part of the measuring procedures and succeeded in not only decreasing judgment errors but also reducing the burden on inspection staff.



People who were granted awards by the Group Quality Committee. (From left) Mr. Tanaka from Nikkeikin Aluminium Core Technology Co., Ltd., Chairman Murakami, Ms. Bamba from Toyo Rikagaku Kenkyusho Co., Ltd., and Mr. Yoshimura from Riken Light Metal Industry Co., Ltd.

Message from an Award Recipient



Ms. Tomoe Bamba

Quality Assurance Gr.,  
Quality Assurance Division  
Toyo Rikagaku Kenkyusho Co., Ltd.

I work on quality assurance by beginning to be involved in the production in the test production phase and trying to apply the 5-Gen Principle\*.

We applied for the competition with an improvement we made by cooperating with a partner company. We made the improvement because we were about to run out of stock for a customer because of poor product yield at the partner company. Initially, I had trouble communicating well with people from the partner company. I tried to respond sincerely to their requests while also explaining to them what we wanted. This allowed me to collect various opinions, and then we began to proceed smoothly with the improvement. We received help from Nippon Light Metal Co., Ltd. in the technological aspect of aluminum die-casting. We took full advantage of the Team NLM's strengths in this improvement.

I would like to go for the Highest Award again next time, and achieve a second straight victory.

\* A set of principles that focus on the frontline (Gen-ba), actual items or products (Gen-butsu), actual condition or situation (Gen-jitsu), actual principle or theory (Gen-ri), and actual rules or standards (Gen-soku).

Message from an Award Recipient



Mr. Yasuhito Tanaka

Quality Assurance Gr.  
Nikkeikin Aluminium Core  
Technology Co., Ltd.

I am in charge of the quality assurance of forged automotive suspensions.

This time, I coordinated activities for automating the tensile testing at the extruding plant, thereby creating a system in which humans cannot intervene. I visited individual facilities to identify current problems and visited model facilities to have them understand the necessity of automation. I also supported facilities needing help by joining the people working there. Because tensile testing machines and systems differed between facilities, I had difficulty finding a way to automate the testing. I believe we could build a leading system in the group.

Message from an Award Recipient



Mr. Fujio Yoshimura

Quality and Environmental  
Improvement Promotion Office  
Riken Light Metal Industry Co., Ltd.

I am involved in the quality assurance of extruded materials. We began trying to make the improvement when we increased the points of inspection to provide higher-quality products to customers. We proceeded with the project by reflecting on requests from inspection staff to eliminate inconvenience to them, so that they can do inspections smoothly without error. After we succeeded in making the improvement, the staff told us "We are happy with the new system although we were puzzled at the difference from previous tasks. We can now complete inspections on time without working overtime despite the increased number of inspection points." I feel that the hardship paid off.

Cross-check

At the NLM Group, we manufacture and sell products that use aluminum and aluminum alloys. While aluminum itself is a soft metal, it can be converted into aluminum alloys with diverse properties by adding other metallic elements, such as silicon, iron, copper, and magnesium, or by treating it with heat. The amounts of the additives need to be controlled by the one-hundredth to one-millionth of a gram. In addition, we need to ensure that specific elements are not contained, to comply with Europe's RoHS Directive\*<sup>1</sup>, REACH\*<sup>2</sup>, and other regulations. For this purpose, we conduct emission spectrochemical analysis to confirm that specific elements are not contained. We also conduct tensile testing of aluminum alloys we manufacture to check their mechanical performance, such as tensile strength and stretch, and confirm that they have the specific performance required by customers.

We conduct these tests using equipment dedicated for each. To control the components by one-millionth of a gram, however, we need to ensure the precision of analytical work and tackle instrument errors. Therefore, we conduct cross-checks between the group's facilities in Japan and overseas every year to ensure the precision of analysis and that such errors are not overlooked. Cross-checking involves analyses or tests of the same material conducted under the same conditions at multiple facilities to check for differences or variations in the results. The results of cross-checks are distributed to each facility and reflected in the adjustment of equipment to improve the accuracy of analysis. Results of the overall cross-check are reported to the Group Quality Committee.

In FY2018, an emission spectrochemical analysis cross-check was conducted at 15 facilities and a tensile testing cross-check was conducted at 16 facilities, and no problems were found in those facilities.

The Nikkei Research and Development Center, which is in charge of cross-checks, is engaged in research and development as the R&D base of the NLM Group. At the same time, its Analysis & Material Test Group conducts various analyses including elemental analysis, compound identification, morphological observation, crystal structure analysis, surface analysis, environmental analysis, and materials testing. The Nikkei Research and Development Center is the only testing laboratory in the NLM Group that is JIS Q17025 certified.

\*1: RoHS Directive: RoHS stands for Restriction of the use of certain Hazardous Substances in electrical and electronic equipment.  
\*2: REACH stands for Registration, Evaluation, Authorization, and Restriction of Chemicals.



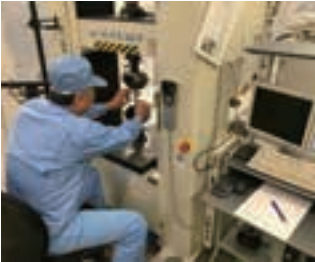
Nikkei Research and Development Center



JIS Q17025 certificate

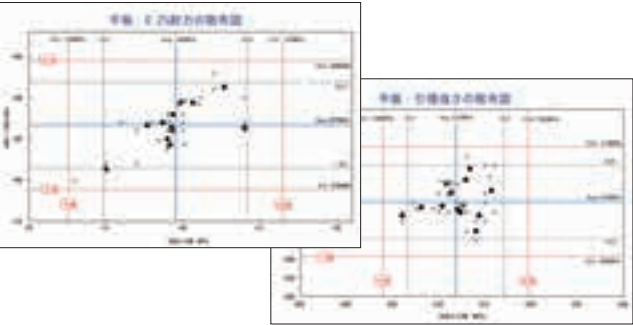


Emission spectrochemical analysis



Tensile testing

Results of cross-check (tensile testing)



Message from Management

At the NLM Group, we are automating tensile testing to eliminate errors caused by differences in analytical work. We need to proceed with the automation with the understanding of its advantages and disadvantages. For example, automation makes some processes into black boxes, and we need to provide training for those black boxes, to understanding which processes have been automated. Therefore, we are planning to hold regular study sessions for people in the group who are involved in tensile testing. We are planning to make the study sessions opportunities to learn the principles and basic rules of tensile testing, latest trends of testing equipment, and other important information.



Mr. Hiroyuki Mochizuki

Leader in charge of material tests  
Analysis & Material Test Group  
Nikkei Research and Development Center  
Nippon Light Metal Co., Ltd.

Message from Management

I was in charge of the emission spectrochemical analysis cross-check. In my work, providing reliable analytical information that is trusted by customers is my top priority.

In the cross-check, I confirmed details such as whether the analyzed points were appropriate, not just the results of analysis. While the analyses themselves are done by machines, the operation and setup of those machines are done by humans. Therefore, we hold study sessions on emission spectrochemical analysis and strive to improve the skill level of the group.



Mr. Yasuhiro Hosoji

Leader in charge of chemical analyses  
Analysis & Material Test Group  
Nikkei Research and Development Center  
Nippon Light Metal Co., Ltd.



# Workstyle reform

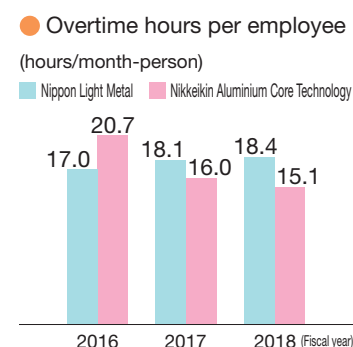
## Workstyle reform

### Measures to reduce long working hours

The NLM Group has been addressing long working hours as part of its workstyle reform. In November 2016, we began to identify employees in Japan who have worked overtime beyond a certain limit and provide support to them. We manage employees' physical and mental health mainly by encouraging them to take paid leave or compensatory leave and having an occupational physician interview and give advice to them. We also invest in plant improvements and equipment to save labor and improve efficiency at production sites.

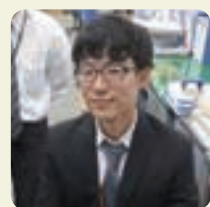
Nippon Light Metal Co., Ltd. improved its working hour management system in April 2019 to reduce overtime hours. The improved system visualizes overtime hours and the level of fatigue of each employee. When overtime hours of an employee have increased, or the level of their fatigue has gone up, the system automatically reports it to their superior the next morning. The superior immediately reviews the workload allocation or take other measures to disperse the workload.

Since FY2017, Nikkeikin Aluminium Core Technology Co., Ltd. has been strictly enforcing a system, under which employees are obliged to declare their overtime hours, in their efforts to reduce overtime hours. As a result, in FY2018 overtime hours were reduced by approx. 27% from the FY2016 level.



### Message from Management

Two years ago, we reviewed the system under which subordinates declare their overtime hours to their superiors. We have since been ensuring that overtime hours are declared, and that superiors and subordinates communicate well with each other under the system. There had been many cases in which employees gave low priority to time management of their operations and selection of operations, resulting in long working hours. We therefore carried out an awareness reform, under which superiors and subordinates thoroughly discussed whether specific jobs have to be done now and whether they really need to be done, so that they select and concentrate on essential tasks. As a result, overtime hours have been reduced, and many employees say that they spend more time with their families and are more motivated to work hard.



Mr. Takaki Indo  
HR Group  
Nikkeikin Aluminium Core Technology Co., Ltd.

### Annual paid leave taken by employees

In FY2018, the usage rate of annual paid leave at the NLM Group in Japan was 58.8%. We have introduced planned annual paid leave, encourage employees to take five or more consecutive days of paid leave as a summer holiday, and take other measures in our efforts to create an environment which facilitates employees to take paid leave.

Nippon Light Metal Co., Ltd. has introduced an accumulated leave system, which permits employees to accumulate expired annual paid leave days for use in the event of illness, nursing care of families, or any other event for which they will have to take long leave. This system was introduced to encourage employees to take annual paid leave for refreshing themselves mentally and physically or for developing themselves, which were the original purposes of the paid leave programs, instead of saving paid leave days to prepare for the above events.

## Childcare support

At the NLM Group, we are committed to supporting employee childcare.

In FY2018, childcare leave was taken by six male employees (one) and 66 female employees (55). (\*Figures in the parentheses indicate numbers in FY2017.)

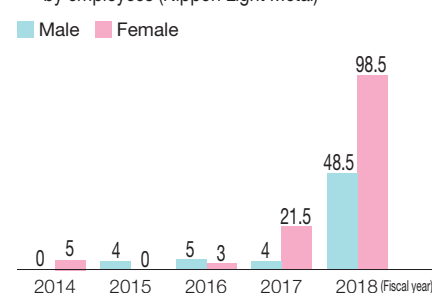
Nippon Light Metal Co., Ltd.'s childcare support programs

- Childcare leave program that can be used until the child becomes three years old (exceeding the statutory age of one year old and up to two years old)
- Shorter working hour program that can be used until the child becomes a third grader (exceeding the statutory age of three years old)
- A program under which employees who left the company to care for children can return to their work (a return-to-work program)
- The first five days of childcare leave are regarded as paid leave to promote use of the leave.
- Accumulated leave for childcare can be used until the child becomes a third grader.
- Family sick leave, which is taken when a child suddenly gets sick or similar situations, is regarded as paid leave. (Five days per year are granted to employees with one child, and ten days per year are granted to those with two or more children.)

To promote the use of these programs, we informed all employees of them via the intranet and our internal newsletters. As a result, the total number of family sick leave days used by employees increased from 25.5 in FY2017 to 147.0 in FY2018.

The NLM Group will continue to enhance support programs to help employees balance work and childcare.

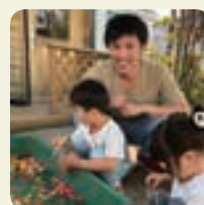
### ● Total number of family sick leave days taken by employees (Nippon Light Metal)



### Message from an employee who took family sick leave

I took family sick leave for my child's hospital visit, and both my wife and child were happier with it than I expected. (Laughter) While the understanding and cooperation of your superiors and co-workers are necessary for taking family sick leave, its conversion to paid leave has clarified that the company is really encouraging us to take the leave, and we are therefore much less hesitant to take it than before.

While childcare is hard in many ways, my wife and I enjoy seeing our child grow. I would like to continue balancing work and childcare by making effective use of the company's programs.



Mr. Keiji Mochizuki  
Maintenance Section  
Power Generation Department  
Kambara Complex  
Nippon Light Metal Co., Ltd.

# Communication with stakeholders

## Communication with suppliers

At the NLM Group, we have been working together with our suppliers in promoting CSR procurement, working toward fair, equitable procurement, elimination of antisocial forces, procurement compliance, management of chemicals contained in our products, response to the problem of conflict minerals, and consideration of human rights and labor environments. Further, we share information about our business continuity plan (BCP), initiatives on SDGs, and other matters with our suppliers, in our efforts to meet the requests and expectations of society.

### Supplier questionnaire

Nippon Light Metal Co., Ltd. requests its suppliers answer the CSR procurement questionnaire, which is sent to them together with the CSR Report issued for them every year, to share our policies on CSR procurement with suppliers. We began this initiative in 2010 and conduct the survey every year. In FY2018, we sent the questionnaire to 446 suppliers, and the response rate was 51.8%.

Trends of their answers show that, concerning initiatives on human rights, more suppliers formulated human rights policies and carried out activities to raise their employees' awareness than the previous year.

Higher awareness was also seen in initiatives for protecting intellectual property rights, with an increasing number of suppliers striving to ensure fair, equitable corporate activities.

### ● Initiatives for promoting CSR procurement taken by using the questionnaire

The frequent occurrence of major disasters in recent years has increased the importance of BCP. The questionnaire has also revealed that suppliers are working proactively to formulate their own BCP.

To have these suppliers' initiatives lead to even more stable procurement, we have created a supply route map by checking some suppliers' production and shipping bases and storage facilities. This has enabled us to quickly narrow down the routes and goods that would be expected to be affected when a major disaster has occurred. Moving forward, we will expand these efforts to other suppliers as well, to increase the certainty of business continuity.

### ● Business continuity plans formulated by suppliers



It was found that approx. 70% of our suppliers have already formulated a BCP or are taking actions to formulate one at present.

## Initiatives for ensuring compliance with the Subcontract Act

At the NLM Group, we are aware that our relationships with suppliers involve the risk of forcing unfair business conditions upon our suppliers by abusing our superior position as the ordering party. We are striving to eliminate such risks with the leading role played by the procurement department.

Above all, we are making group-wide initiatives to comply with the Subcontract Act. We hold study sessions and individual consultation sessions for people in charge of procurement at group companies, conduct case studies, and take other initiatives in our efforts to allow people in charge of procurement to acquire accurate knowledge on their work and to raise their awareness. In FY2018, a total of 200 people from 20 sites participated in training sessions.



A Subcontract Act training session

### Message from a participant

I participated in the session for the first time. I was able to deepen my understanding of the Subcontract Act because the class focused on some key points and therefore was easy to understand. The Subcontract Act is very familiar to me because I am a member of the procurement and purchase department. The session allowed me to reaffirm that the law should be observed.

After the session, I began to pay more careful attention than before to such points as whether or not the Subcontract Act applies to our transactions with suppliers and whether or not the terms and conditions meet the payment conditions stipulated by the Subcontract Act. We are promoting initiatives for the achievement of SDGs at present, and I think the partnerships with our suppliers, who are included in our value chain, are very important. I will work on daily tasks, being more conscious of our obligations than before.



Ms. Naomi Shinohara  
Purchasing & Logistics Dept.  
Nippon Light Metal Co., Ltd.



## Partner meetings

The NLM Group holds partner meetings as a measure for communicating with suppliers. Contents of partner meetings include exchanges of opinions about CSR procurement, SDGs, and development projects. In addition, in FY2018, we showed our partners the renovated HINTBOX (a hands-on showroom).

In April 2019, we sought advice from President Fujita of Nichiei Yakuhin Kogyo Co., Ltd., which is both our supplier and shareholder, about our initiatives, including those regarding CSR procurement and SDGs.

### Interview with a supplier

**Mr. Masaaki Fujita**  
President and Representative Director  
Nichiei Yakuhin Kogyo Co., Ltd.



#### Q Could you evaluate our initiatives from the viewpoint of a supplier?

**A** In the last year, we began to hear the term “SDGs” very frequently as we talk with our business partners. I think that the NLM Group has taken on initiatives ahead of our other business partners. I think that the method of expanding those moves to the overall group is your issue. You can probably make your initiatives meaningful by narrowing them down to specific targets and linking them to your business activities.

#### Q How do you evaluate our initiatives from the standpoint of a shareholder?

**A** First of all, I think that aluminum is excellent from the viewpoint of sustainable business expansion. Above all, the outstanding recycling rate is believed to be a great advantage. From the viewpoint of a shareholder, I can say that the NLM Group, which deals with such a metal, is rich in potential advantages. Further, the NLM Group is also very reliable from the standpoint of a shareholder because it is among the first to proactively carry out CSR activities and activities that address SDGs.

#### Q How do you feel about the BCP initiatives of the NLM Group?

**A** In many cases, specific measures for BCP are limited. However, the NLM Group created a supply map. I think it is a good, practical initiative.

#### Q You saw the HINTBOX when you participated in the partner meeting. Did you think that there were likely to be earnings opportunities from the viewpoint of SDGs and ESG investment?

**A** I didn't find an opportunity immediately, but I thought there were the seeds of possibilities. I think that you will achieve a sustainable business with SHC5®, which I read about in a newspaper the other day, for sterilizing the ballast water of ships. You need to consider user-friendliness and other additional elements with the raw seeds. As your partner, we would like to be useful for you in the supply chain.

\* Website introducing SHC5®  
<https://www.nikkeikin.com/SHC5/index.html>



## Communication with local communities

Riken Light Metal Industry Co., Ltd. brought in two second-year students from Toyoda Junior High School in Shizuoka City for a work experience.

The students learned about processes through to the completion of products at the manufacturing site, and experienced processing and product inspections. They directly handled our products and directly felt what manufacturing is like.

The students gave such comments as “The products were heavier than I expected, so I handled them carefully so as not to hit them against something. As I repeated the work, I became able to do it by myself, which made me happy” and “The work was harder than I thought, but they kindly taught me how to do it, and I enjoyed it.”

Group companies are also proactive in taking initiatives like this. They are actively involved in the development of local communities and carry out activities in accordance with the Social Contribution Policy of the NLM Group.

In FY2018, the NLM Group participated in 371 community programs, and made community investments of 168 million yen.



Students experiencing a quality inspection



A student experiencing product inspections for scratches and dirt

### Measures to address floods in the area around Amehata Dam

On August 16, 2019, Amehata Dam, which is owned by Nippon Light Metal Co., Ltd., was damaged by torrential rain from Typhoon Krosa. This caused water level of the Amehata River upstream from the dam to rise, resulting in a flood in the areas around the dam.

We hereby extend our deepest apologies to residents and other affected people for the great problems and anxieties caused by the flood.

In the efforts to implement the measures needed to prevent the flooding of the Amehata River, which the prefectural government of Yamanashi has requested we take, we submitted an emergency construction plan to prevent floods in the Amehata-ko Honmura district to the River Improvement and Management Division, Prefectural Land Development Department of the Yamanashi prefectural government on August 30, 2019. We are proceeding with the construction work quickly in accordance with the plan.

<Content of the plan submitted to the Yamanashi prefectural government>

Prompt emergency measures for preventing damages from flood  
(1) Build an embankment along an approx. 380-meter section of the river in the district, to prevent the Honmura district from flooding.

The target period of construction shall be from August 23, 2019 to late September of the same year.

(2) Build concrete floodwalls along an approx. 200-meter section of the Honmura district bypass road, to prevent the surrounding area from flooding after the road is flooded. The target period of construction shall be from August 22, 2019 to late November of the same year.

(3) Take sufficient safety measures and give full consideration to the health of the environment.

In addition to taking these emergency measures, we have set up an investigative commission with the Kanto Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism, the Yamanashi prefectural government, and the municipal government of Hayakawa Town. This commission will examine permanent measures.

# Aiming for governance that improves our corporate value

## NLM Group

Nippon Light Metal Holdings Co., Ltd. (NLM HD) is the holding company listed on the First Section Market of Tokyo Stock Exchange, Inc. We have formed the NLM Group, which consists of 77 consolidated subsidiaries including Nippon Light Metal Co., Ltd. and Toyo Aluminium K.K., the core operating companies (as of March 31, 2019). At the NLM Group, we operate businesses with a focus on the manufacture and sales of aluminum and related products.

## The group's governance structure

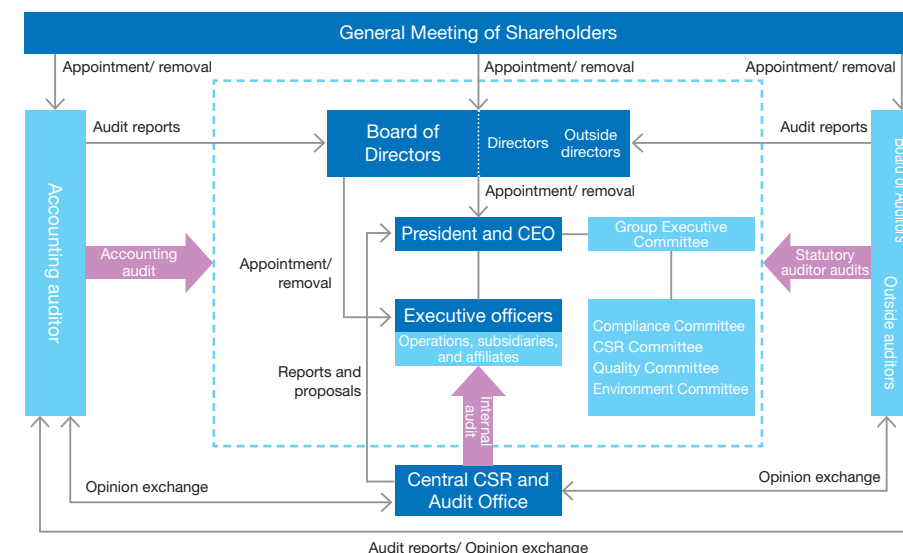
The NLM Group's basic approach to management is systematized as the Group Management Policy, which consists of three pillars and 13 basic policies.

Matters concerning the NLM Group's governance are managed based mainly on rules on the group stipulated by the NLM HD, while the autonomy of each company is respected.

In addition, decisions on matters that affect the overall group are made after they are examined from multiple perspectives by the Group Executive Committee, which consists mainly of directors of the NLM HD. Among these matters, those that are especially important are discussed and determined by the Board of Directors of the NLM HD.

The Board of Directors of the NLM HD consists of 13 members including four outside directors. They met 12 times in FY2018. To operate the Board of Directors flexibly and ensure fruitful discussions at its meetings, the NLM HD has separated management supervision from business execution by introducing an executive officer system.

### Governance structure



### Outside directors / outside auditors ratios

Thirteen directors (term: one year)

Four outside directors (All of them are independent directors\*)

Six auditors (term: four years)

Three outside auditors (All of them are independent auditors.)

\* Defined by of Tokyo Stock Exchange, Inc. as “an outside director/auditor who is unlikely to have conflicts of interest with general shareholders”



## Internal control

The Board of Directors of the NLM HD has determined the Basic Policy on the Development of the Internal Control System and is striving to apply the policy uncompromisingly. In addition, the Board of Directors receives a report about the status of internal control every two quarters and provides appropriate supervision and instructions.

## Risk management

Under the risk management system of the NLM Group, risks are classified into strategic risks<sup>\*1</sup>, operational risks<sup>\*2</sup>, and hazard risks<sup>\*3</sup>. Above all, we specify priority risks mainly among operational risks and hazard risks, and we have set up a supervisory department at the NLM HD to respond flexibly to individual risks. The supervisory department handles risks by cooperating with business departments.

The Board of Directors of the NLM HD receives a report on the overall risk management situations twice a year and evaluates the contents of the report before giving the necessary instructions.

In FY2018, we focused on the problem of quality fraud, which became a social problem, and conducted a group-wide inspection of testing and inspection systems and quality specifications and took other initiatives in our efforts to reinforce our quality assurance system.

<sup>\*1</sup> Business strategies, market, economic fluctuation, legal system reform, and others

<sup>\*2</sup> Defective product or service, environmental accident, and others

<sup>\*3</sup> Natural disasters, accidents, and others

### Priority risks



## Internal control over financial reporting

To ensure appropriate financial reporting, we have established and operate an internal control system over financial reporting. For this purpose, we have appointed an internal control executive and an internal control promoter at each group company and segment and promote appropriate establishment and operation of internal control system.

Evaluation is undertaken by auditing departments under the direct control of the president of NLM HD and whose independence is secured. The status of the establishment, operation, and evaluation is reported to auditors, accounting auditor, and the Board of Directors of the NLM HD and corrections are made as needed.

## Compliance system

### Compliance Committee

The NLM Group has set up a Compliance Committee, which is chaired by the president and CEO of NLM HD and consists of the members of the Board of Directors of NLM HD. The Compliance Committee prepares a compliance promotion plan every year and checks the status of implementation of the plan on a quarterly basis

### Compliance Codes and compliance meetings

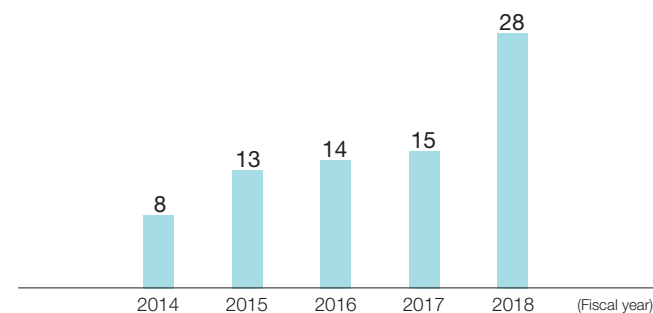
The codes of conduct of the NLM Group are published as the Group Compliance Codes, which require all officers and employees of the group, including those outside Japan, to comply with laws and regulations, corporate ethics, and business etiquette, act sensibly, and communicate with stakeholders proactively, among other requirements. To ensure officers and employees are thoroughly informed of these codes, a handbook containing them is distributed to all so that they can carry it around.

Moreover, to promote the understanding of, and inform employees thoroughly of, the codes of conduct, a compliance meeting is held at each workplace twice a year to enable them to learn by repetition. At the meetings, participants exchange opinions about problems faced in the workplace, case examples of compliance violations that occurred in other departments, and other subjects. In FY2018, a total of 2,066 workplace meetings were held, with 20,972 participants in total (participation rate: 93%).

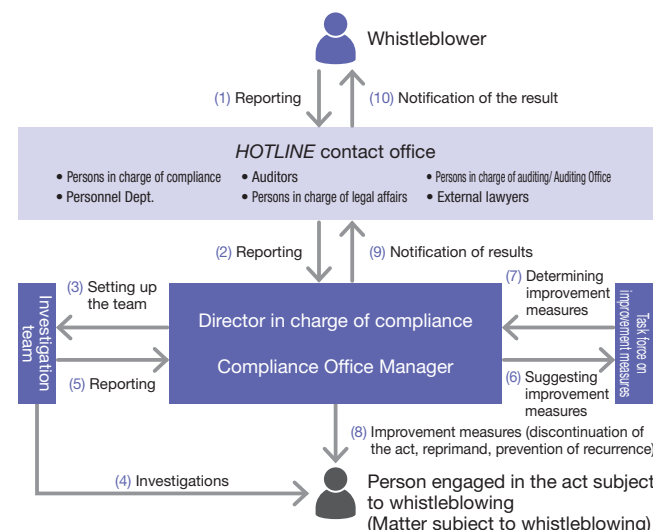
### Whistleblowing system

A whistleblowing system has been introduced at major group companies. In addition, the *NIKKEI HOTLINE*, the group's common contact office for whistleblowers, has been set up.

### Number of cases that were reported to *NIKKEI HOTLINE*



### How *NIKKEI HOTLINE* works



## Make Team NLM move further forward by promoting exchange and interaction between human assets beyond the boundaries of companies and businesses!

### Q1 Outside directors began to inspect group companies' factories and other facilities the fiscal year before last. Could you tell us how you found the work sites?

I was impressed with all of the factories. I think this initiative is a very good one. There are many things that are taken for granted at work sites but unknown to directors unless we actually see the work sites. Seeing work sites in person, I can find things that were not seen in materials submitted to the Board of Directors or presentations given to us, in my own way. In addition, the eyes of onsite workers tell us whether each factory is lively or not, for example. By seeing sites with our own eyes, we can prevent misunderstandings that occur when we just see materials. Therefore, I think that this initiative increases the effectiveness of governance.

### Q2 Could you give us your opinions about the Board of Directors of the NLM HD?

I think that the Board of Directors of NLM HD is very open. As far as I have experienced, boards of directors where only the president makes statements is not unusual among other companies. I believe that the duty of outside directors is to make suggestions to have businesses executed in an appropriate direction, based on our experience. This requires that the Board of Directors should be an open place. On this point, the Board of Directors of NLM HD provides opportunities to discuss various topics as well as matters for resolution. At its meetings, outside directors with diverse careers and experience express their opinions without reservation from different perspectives and angles. I think it is important to maintain this sort of open atmosphere at the Board of Directors meetings.

### Q3 Could you tell us what problems you see in the governance of NLM HD?

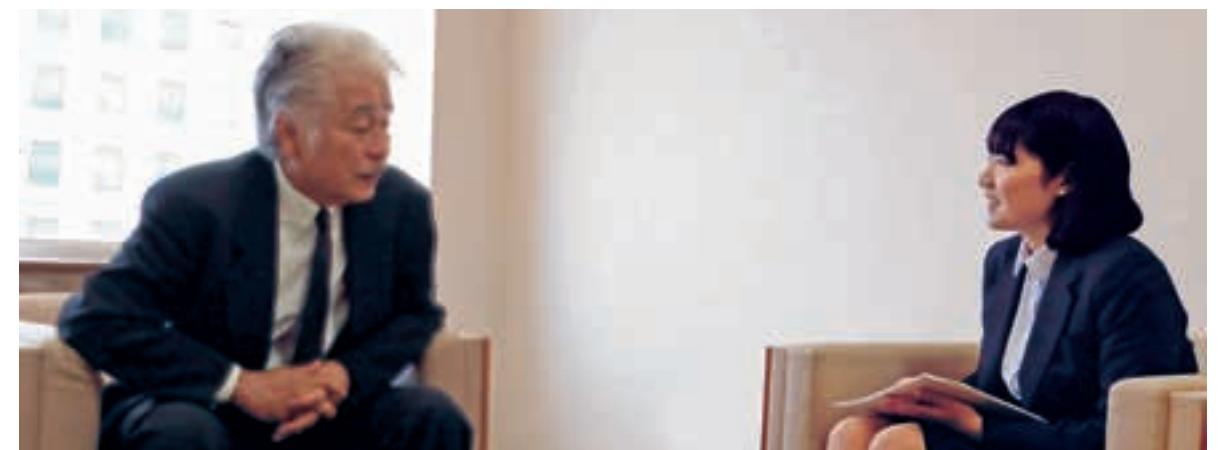
I think that governance is functioning well by and large. I think it is because governance is functioning appropriately that business performance has improved as much as it has. I sometimes feel that you should go one step further. Why don't you become more



committed to using human assets for deepening the Team NLM and cross-functional collaboration that the group puts forward? I feel that your initiatives regarding how human assets should interact with each other beyond the boundaries between group companies and business divisions is still inadequate. While it is natural that you should want to retain excellent human assets in your division, you must overcome the boundaries. Why don't you set up a personnel committee or a similar organization involving external people as well, to help you overcome the boundaries? I think that you need to create a system or mechanism which leads excellent human assets to interact with each other within the group and proactively develop each other. I think it is only when you have created such a system or mechanism that you will achieve Team NLM and cross-functional collaboration.

### Q4 Please give a message to the young future leaders.

I request that young employees experience many failures while they are young. You will learn a lot from experiencing failure. You will not only learn how to find the causes of failure and how to cope with it, but also learn to understand the feelings of people who have failed in something. This will help you to support your subordinates and co-workers when you have become a manager and they have failed in something. I also request that you do your best in your work, without fear of failure. Give your opinions frankly to your superiors. While decisions are made by your superior, you should tell them what you think is right for the company. It's wrong to think that right things will make themselves known without words. I think it is essential to love your work and work hard on each one of your tasks without running away from them. I think that a company's growth is brought about by the accumulation of such attitudes toward work. All of us are born by chance and are destined to die someday. I request that you keep thinking all the time about the mental attitude you should have in the time that you have and cherish the present moments of your life.



Mr. Ryoichi Hayashi, an outside director

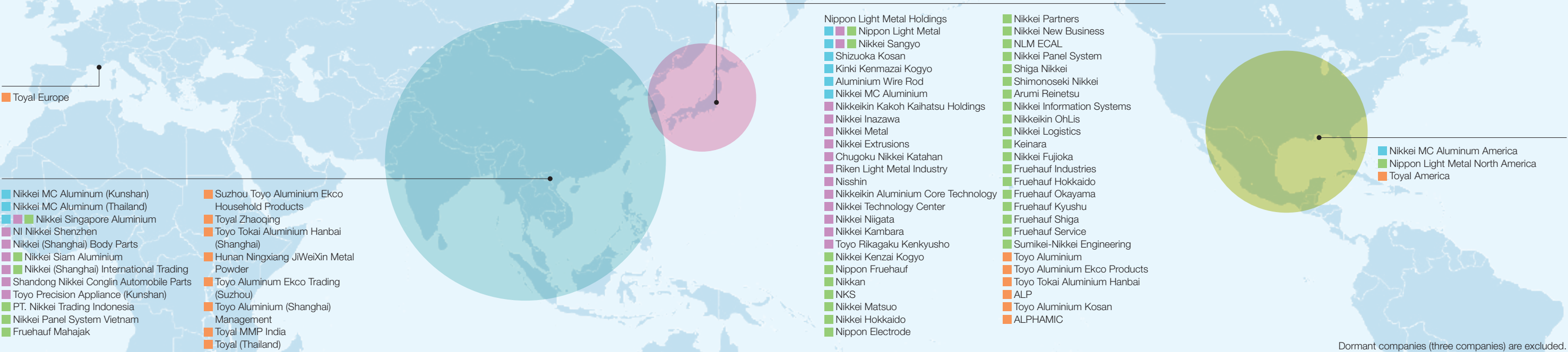
Interviewer: Ms. Mayu Ogasawara, Personnel Dept., Nippon Light Metal Co., Ltd.

Global network

- Alumina, Chemicals, and Ingot Business

Fabricated Products and Other Businesses
- Sheet and Extruded Products Business

Foil and Powder Products Business



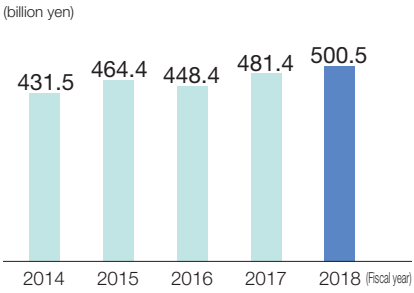
Corporate overview

<b>Trade name:</b>	Nippon Light Metal Holdings Company, Ltd. (Abbreviated to “NLM HD”)	<b>Established:</b>	October 1, 2012
<b>Securities code:</b>	5703	<b>Paid-in-capital:</b>	46,525 million yen
<b>Head office location:</b>	2-2-20 Higashi Shinagawa, Shinagawa-ku, Tokyo	<b>Sales:</b>	500,451 million yen (consolidated)
		<b>Number of employees:</b>	13,316 (consolidated)

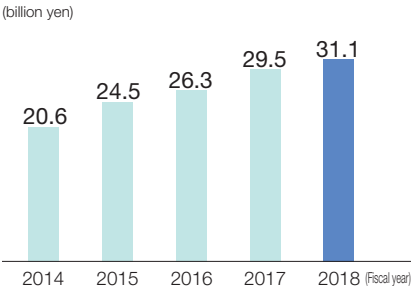
\*All data are from FY2018 or as of March 31, 2019.

Financial highlights

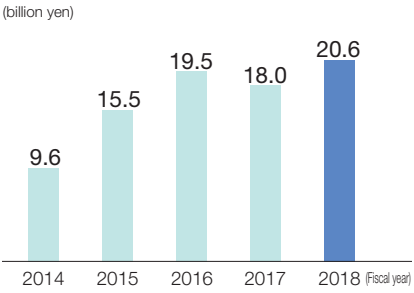
Net sales (consolidated)



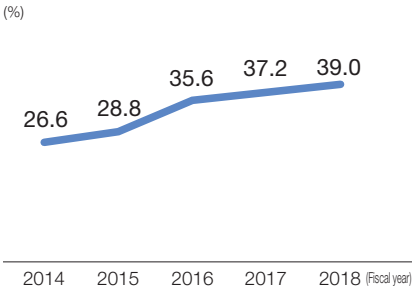
Ordinary profit (consolidated)



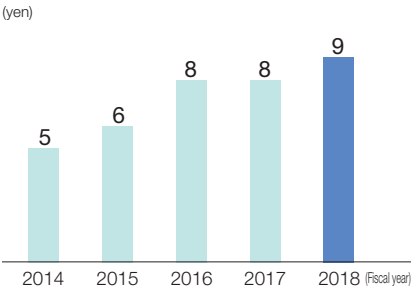
Profit attributable to owners of parent (consolidated)



Equity ratio (consolidated)



Dividend



Business summary

**Alumina, Chemicals, and Ingot Business**

**Sales ratio**  
23%

**Sales** 117.0 billion yen

**Sales ratio**  
23%

**Sales** 107.8 billion yen

**Sales ratio**  
36%

**Sales** 180.3 billion yen

**Sales ratio**  
19%

**Sales** 95.3 billion yen

The alumina and chemicals segment manufactures aluminum hydroxide, alumina, and various other chemicals. These products are used in a range of fields, including as fire retardants, raw materials for ceramics, and industrial materials for the manufacture of pulp and paper. The ingot segment manufactures a variety of aluminum ingots and is highly evaluated for the development of highly-functional ingots that cater to customers' needs.

Aluminum sheets and extrusion products are used in a wide range of fields, such as for automotive parts and railway cars in the transport industry and for semiconductor/liquid-crystal manufacturing equipment and photosensitive drums in the electrical and electronics industry. The NLM Group makes use of its technologies and expertise cultivated over many years to proactively develop products that meet customers' needs and to supply highly functional sheets and extrusion products.

The NLM Group has many group companies that deal with distinctive fabricated products. Among them, truck bodies from Nippon Fruehauf Co., Ltd. and commercial refrigerators and freezer panels from Nikkei Panel System Co., Ltd. are highly valued for their quality and thereby enjoy the top share in each industry. We also supply other aluminum fabricated products that are closely related to our everyday lives, including anodized aluminum foil for aluminum electrolytic capacitors, automotive parts, and carbon products.

Toyo Aluminium K.K. plays the leading role in these businesses. We have established our position as a leading manufacturer by developing a wide range of products that incorporate aluminum's special characteristics and that are useful in society, industry and everyday life. They include packaging materials for food and pharmaceuticals, products for electronics, aluminum paste, and solar cell materials. We develop new fields by utilizing our own technologies as the foundation and provide a range of highly functional materials and products in markets at home and abroad.



Our responses to previous third-party opinions

The following are opinions (from Ms. Mizue Unno) about the CSR Report 2018 of the NLM Group and the responses of the group to the opinions.

Major opinions	Responses of the NLM Group	Applicable page
It is important that the group clarify its operations leading to the creation of corporate value related to social elements in the form of a sustainability strategy. ... and they will strengthen cooperation with the development and sales departments. I would like to suggest here that the group also discuss SDG-related issues.	We have begun to discuss countermeasures against the climate change problem. Above all, concerning opportunities, we will accelerate discussions in relation to SDGs.	P2 P4-5 P10
Overall emissions will increase if the group's production activities continue to intensify, which means that the efforts of people on the frontlines will not be enough. ... Since its founding, NLM has been generating power using in-house hydroelectric generators that it developed on its own. I think that one possible measure the group can take is to conduct a comprehensive examination of the energy used in power generation.	Our greenhouse gas emissions decreased in FY2018 due in part to the reduction of production. We have yet to conduct the comprehensive examination of energy that was suggested. We think that it is one of the issues we should consider as we discuss the problem of climate change in the future.	P21-23
Recycling is another major environmental issue. An index for the level of achievement made each year will facilitate understanding, and the group will need to evaluate the achievements of its activities over time based on the index.	At the NLM Group, we position recycling as one of our main businesses. In FY2018, recycled materials constituted 33% of the materials that we used. We are also advancing initiatives for increasing case examples of recycling involving the group and our customers (closed recycling).	P4-5 P12-15
I ask the group to continue its comprehensive activities for labor safety and quality control, by separating them from activities for contributing to local communities and by maintaining awareness of compliance, regarding them as responsible activities that support the group's business foundation.	Safety and quality are material issues that the NLM Group has selected tentatively. We have set <i>giving priority to safety and ensuring compliance and strict quality control</i> as a basic policy in our new mid-term management plan, to clarify that these responsible activities support the foundation of our businesses. We are also working to turn these issues into the group's added value.	P10 P24 P25-27
Even if communication with stakeholders is also included in governance, the group should emphasize initiatives that mitigate risk, that is, initiatives related to the problems of facing and resolving stakeholders' concerns and issues.	We have tentatively selected safety, quality, and the environment as material issues for the group. Moving forward, we will proceed with review and the selection of material issues through dialogue with our stakeholders.	P5 P10 P29-30



Managing Director,  
So-Tech Consulting, Inc.

Mizue Unno

The NLM Group launched its new mid-term management plan in FY2019. It is taking steps toward the next stage under the slogan of “groundbreaking innovator of aluminum and beyond.” Sustainability factors are included in the new business domain in the plan, and the group’s CSR has made progress, transcending the previous domain.

In this issue’s special features entitled “Contributing to building a sustainable society with aluminum,” the company explains the sustainability initiatives of its businesses, and the report has become easier to understand on this point. The group is expected to develop this further to a sustainability management plan. For this purpose, the group should first show the sustainable future society it aims for and the domains of its business innovation. At present, the group has put up themes but has yet to systematized them sufficiently. It is therefore important to sort out issues like this, set targets, and keep checking progress.

For example, there are two paths toward achieving sustainable society with aluminum materials, providing products and building public infrastructure. The former applies to products for environmentally friendly vehicles and the medical industry mentioned in the mid-term plan. Concerning the latter, I ask the group to be conscious of society as well as itself and keep an eye toward the impact on society in the sustainability plan.

**The environment:** Information disclosure related to the climate is demanded more strongly than before, and initiatives for reducing greenhouse gas emissions surpassing the previous ones and disclosure of such initiatives have been the focus. We are in an era when long-term vision and analysis and identification of business risks and opportunities are necessary, and even collaboration with external parties beyond initiatives within each site are considered. I ask the group to show specifically the style of a groundbreaking innovator that makes use of its services and various technologies to expand its ideas to new business models involving collaborations with other industries as well, while positioning its aluminum business at the core.

**Society:** Regarding CSR procurement from suppliers, the corporate responsibility of global enterprises is strongly questioned globally. I ask the group to report its initiatives in this respect, including its overseas businesses. Concerning communication with stakeholders, it is important to report not only what the group did with which stakeholders but also what issues were brought up by the stakeholders and what lessons were learned, and what changes were made by the group, for example. In addition, shareholders should be positioned as targets of engagement activities as a governance measure, instead of being included among stakeholders. I also ask the group to go so far as to report achievements of enhanced engagement with shareholders, such as its impact on the business management of the group.



Independent Assurance Report

To the President and CEO of Nippon Light Metal Holdings Company, Ltd.

We were engaged by Nippon Light Metal Holdings Company, Ltd. (the “Company”) to undertake a limited assurance engagement of the environmental performance indicators marked with ★ (the “Indicators”) for the period from April 1, 2018 to March 31, 2019 included in its CSR Report 2019 (the “Report”) for the fiscal year ended March 31, 2019.

The Company’s Responsibility

The Company is responsible for the preparation of the Indicators in accordance with its own reporting criteria (the “Company’s reporting criteria”), as described in the Report.

Our Responsibility

Our responsibility is to express a limited assurance conclusion on the Indicators based on the procedures we have performed. We conducted our engagement in accordance with the ‘International Standard on Assurance Engagements (ISAE) 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information’ and the ‘ISAE 3410, Assurance Engagements on Greenhouse Gas Statements’ issued by the International Auditing and Assurance Standards Board. The limited assurance engagement consisted of making inquiries, primarily of persons responsible for the preparation of information presented in the Report, and applying analytical and other procedures, and the procedures performed vary in nature from, and are less in extent than for, a reasonable assurance engagement. The level of assurance provided is thus not as high as that provided by a reasonable assurance engagement. Our assurance procedures included:

- Interviewing the Company’s responsible personnel to obtain an understanding of its policy for preparing the Report and reviewing the Company’s reporting criteria.
- Inquiring about the design of the systems and methods used to collect and process the Indicators.
- Performing analytical procedures on the Indicators.
- Examining, on a test basis, evidence supporting the generation, aggregation and reporting of the Indicators in conformity with the Company’s reporting criteria, and recalculating the Indicators.
- Visiting Nikkei Niigata Company Ltd. selected on the basis of a risk analysis.
- Evaluating the overall presentation of the Indicators.

Conclusion

Based on the procedures performed, as described above, nothing has come to our attention that causes us to believe that the Indicators in the Report are not prepared, in all material respects, in accordance with the Company’s reporting criteria as described in the Report.

Our Independence and Quality Control

We have complied with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants, which includes independence and other requirements founded on fundamental principles of integrity, objectivity, professional competence and due care, confidentiality and professional behavior. In accordance with International Standard on Quality Control 1, we maintain a comprehensive system of quality control including documented policies and procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

KPMG AZSA Sustainability Co., Ltd.

KPMG AZSA Sustainability Co., Ltd.

Tokyo, Japan

October 28, 2019

			Coverage	2016	2017	2018	Unit
The Environment							
Greenhouse gas emissions (Scope 1, Scope 2)* <sup>1</sup>		Consolidated (Japan only)* <sup>2</sup>		796	804	★ 748	thousand tons-CO <sub>2</sub>
		Consolidated (besides Japan)* <sup>3</sup>		135	125	137	thousand tons-CO <sub>2</sub>
Greenhouse gas emission intensity per unit of sales* <sup>1</sup>		Consolidated (Japan only)		2.19	2.09	1.87	tons-CO <sub>2</sub> / Million yen
Breakdown of Scope 3 emissions* <sup>4</sup>	Category 1: Purchased goods and services* <sup>5</sup>	Consolidated		1,962	1,926	★ 1,947	thousand tons-CO <sub>2</sub>
	Category 2: Capital goods	Consolidated		21	22	35	thousand tons-CO <sub>2</sub>
	Category 3: Fuel and energy related activities (not included in Scope 1 or 2)	Consolidated		33	28	34	thousand tons-CO <sub>2</sub>
	Category 4: Upstream transportation and distribution	Consolidated		11	11	11	thousand tons-CO <sub>2</sub>
	Category 5: Waste generated in operation	Consolidated		4	4	5	thousand tons-CO <sub>2</sub>
	Category 6: Business travel	Consolidated		0	0	0	thousand tons-CO <sub>2</sub>
	Category 7: Employee commuting	Consolidated		3	3	3	thousand tons-CO <sub>2</sub>
	Energy consumption	Electricity, steam	Consolidated		10.6	10.8	10.4
	Fuels	Consolidated		6.3	6.3	6.2	PJ
Energy consumption intensity per unit of sales		Consolidated		37.7	35.5	33.2	GJ/ Million yen
Weight of raw materials used in production		Consolidated		618	576	601	thousand tons
SOx emissions		Consolidated		341	473	379	tons
NOx emissions		Consolidated		576	520	560	tons
Quantity of water intake* <sup>5</sup>		Consolidated		* <sup>7</sup> 23.7	23.5	23.9	million m <sup>3</sup>
Total amount of discharged water		Consolidated		30.8	28.6	28.5	million m <sup>3</sup>
COD emissions		Consolidated		119	97	105	tons
Emissions and disposal of waste and waste byproducts	Recycled/Reduced	Consolidated		40.9	37.3	48.4	thousand tons
	Disposed (landfill)	Consolidated		3.9	3.5	3.5	thousand tons
Environmental accounting	Environmental conservation expenditure: Investment	Consolidated (Japan only)		2,009	1,983	2,218	million yen
	Environmental conservation expenditure: Expenditure	Consolidated (Japan only)		5,847	* <sup>8</sup> 5,598	6,210	million yen
	Economic effect of environmental conservation activities: Earnings	Consolidated (Japan only)		397	486	554	million yen
	Economic effect of environmental conservation activities: Changes in expenditure* <sup>9</sup> , * <sup>10</sup>	Consolidated (Japan only)		2,770	-1,440	-982	million yen
Number of cases of lawsuits, penalties, or forfeitures related to the environment		Consolidated		0	0	0	cases
Number of accidents related to the environment* <sup>11</sup>		Consolidated		3	0	0	cases
Number of complaints related to the environment* <sup>12</sup>		Consolidated		4	10	16	cases
Employees							
Number of directors	Full-time directors	Consolidated	Male	187	190	208	Number
		Consolidated	Female	0	0	0	Number
Number of employees	Employees (managerial employees)	Consolidated	Male	1,529	1,540	1,640	Number
		Consolidated	Female	73	90	95	Number
	Employees (regular employees)	Consolidated	Male	9,091	8,992	9,087	Number
		Consolidated	Female	2,433	2,233	2,494	Number
Number of employees by country/region	Employees	Consolidated	Total	13,126	12,855	13,316	Number
	Japan	Consolidated	Male	7,879	8,058	8,399	Number
		Consolidated	Female	1,135	1,198	1,271	Number
	Asia	Consolidated	Male	2,506	2,243	2,282	Number
		Consolidated	Female	1,331	1,089	1,095	Number
	U.S. and Europe	Consolidated	Male	235	231	229	Number
		Consolidated	Female	40	36	40	Number
		Consolidated	Female	—	—	—	Number
Number of employees in each age group* <sup>14</sup>	15 to 19 years old	Consolidated	Male	—	—	108	Number
		Consolidated	Female	—	—	15	Number
	20 to 29	Consolidated	Male	—	—	2,153	Number
		Consolidated	Female	—	—	559	Number
	30 to 39	Consolidated	Male	—	—	3,150	Number
		Consolidated	Female	—	—	833	Number
	40 to 49	Consolidated	Male	—	—	2,878	Number
		Consolidated	Female	—	—	671	Number
	50 to 59	Consolidated	Male	—	—	1,975	Number
		Consolidated	Female	—	—	276	Number
	60 or older	Consolidated	Male	—	—	646	Number
		Consolidated	Female	—	—	52	Number
Number of new hires* <sup>15</sup>	Total	Consolidated (Japan only)		—	596	692	Number
	Percentage to employees	Consolidated (Japan only)		—	7.1	7.8	%
Number of new graduates who were recruited* <sup>15</sup>		Consolidated (Japan only)		—	197	211	Number
Number of employees who left* <sup>15</sup>	Total	Consolidated (Japan only)		—	401	490	Number
	Percentage to employees	Consolidated (Japan only)		—	3.5	5.6	%
Three-year retention rate* <sup>15</sup> * <sup>16</sup>		Consolidated (Japan only)		—	88.4	83.8	%
Number of those who were re-employed after retirement		Non-consolidated (Nippon Light Metal Co., Ltd.)		26	8	8	Number
Labor Union participation rate		Non-consolidated (Nippon Light Metal Co., Ltd.)		100	100	100	%

Coverage		2016	2017	2018	Unit
Average age*15	Consolidated Male	—	39.1	39.9	years old
	Consolidated Female	—	36.9	37.4	years old
Average duration of service*15	Consolidated Male	—	11.5	11.8	years
	Consolidated Female	—	7.7	8.0	years
Average annual hours worked*15	Consolidated (Japan only) Male	—	2,146	2,157	hours/ person
	Consolidated (Japan only) Female	—	1,974	1,871	hours/ person
Average annual overtime work hours*15	Consolidated (Japan only) Male	—	324	302	hours/ person
	Consolidated (Japan only) Female	—	161	150	hours/ person
Average number of days of annual paid leave taken*15	Consolidated Male	—	9.9	9.9	days
	Consolidated Female	—	9.7	9.6	days
Average rate of acquisition of annual paid leave*15	Consolidated Male	—	52.5	57.8	%
	Consolidated Female	—	71.6	73.4	%
Number of employees who newly took childcare leave*15	Consolidated (Japan only) Male	—	1	6	Number
	Consolidated (Japan only) Female	—	55	66	Number
Number of employees who newly took nursing care leave*15	Consolidated (Japan only) Male	—	2	4	Number
	Consolidated (Japan only) Female	—	1	2	Number
Number of users of the shorter working hour program*15	Consolidated (Japan only) Male	—	0	1	Number
	Consolidated (Japan only) Female	—	61	66	Number
Number of employees who were absent from work due to mental health problems*15	Consolidated (Japan only) Male	—	34	59	Number
	Consolidated (Japan only) Female	—	2	9	Number
Average annual amount of expenditure for education/ training*15	Consolidated	—	29.2	24.9	thousand yen/ person
Employment rate of people with disabilities*17	Non-consolidated (Nippon Light Metal Co., Ltd.)	2.47	2.59	2.63	%
	Non-consolidated (Toyo Aluminium K.K.)	2.05	2.03	1.93	%

Safety

Number of workplace injuries*18	Lost-time injuries	Consolidated (Japan only)	9	12	23	cases
		Consolidated (besides Japan)	8	8	16	cases
	Non-lost-time injuries	Consolidated (Japan only)	43	65	64	cases
		Consolidated (besides Japan)	9	5	5	cases
Frequency rate of lost-time injuries*18,*19		Consolidated	0.46	0.56	1.05	
		Non-consolidated (Nippon Light Metal Co., Ltd.)	0.00	0.27	0.54	

Compliance

Number of cases that were reported to NIKKEI HOTLINE*20		Consolidated	14	15	28	cases
	Compliance meeting	Consolidated	2,230	2,102	2,066	times
		Consolidated	19,991	20,237	20,972	total number
Number of patent publications*18	Number of participants	Consolidated	126	182	167	cases
Number of patent registrations*18		Consolidated	143	107	92	cases

Quality assurance

Number of violations of laws or regulations in the provision of products/services	Consolidated	0	0	0	cases
Number of prompt reports	Consolidated	10	6	8	cases
Number of recalls	Consolidated	4	2	4	cases

Community

Expenditure related to social contribution	Consolidated	163	133	168	million yen
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Governance

Interim and year-end dividend per share	Consolidated	8	8	9	yen
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★: We have received independent assurance by KPMG AZSA Sustainability Co., Ltd. regarding the reliability of the data.

\*1. In FY2018, we began to compile statistics on greenhouse gas emissions from our main offices.  
\*2. The value for greenhouse gas emissions (in Japan) for FY2017 was incorrect and was therefore corrected.  
The following CO<sub>2</sub> emission factors were used for the calculations.  
Electricity: The CO<sub>2</sub> emission factor with T&D losses of each previous fiscal year announced by the Federation of Electric Power Companies of Japan and the Electric Power Council for a Low Carbon Society  
Fuel: CO<sub>2</sub> emissions as per heat value and calorific value for each fuel, which are set forth in the Ministerial Ordinance for Calculation of Greenhouse Gas Emissions Associated with Business Activities of Specified Emitters  
\*3. For calculating CO<sub>2</sub> emissions related to electric power, we use the latest CO<sub>2</sub> emission factor of each country that is shown in CO<sub>2</sub> emissions from fuel combustion 2017, which was published by the International Energy Agency (IEA).  
For calculating CO<sub>2</sub> emissions related to fuels, we use the CO<sub>2</sub> emission factor of Japan.  
\*4. The emissions are calculated by multiplying the activity amount by the CO<sub>2</sub> emission factor published by the Ministry of Economy, Trade and Industry and the Ministry of the Environment.  
\*5. The Scope 3 Category 1 emissions are calculated based on the volume of purchase of the top three items in terms of volume purchased from outside of the group. Of the items, the aluminum ingots are those purchased by Nippon Light Metal Group Metal Center.  
\*6. The seawater intake quantity is not included.  
\*7. Coverage: Consolidated (Japan only)  
\*8. The value for FY2017 was incorrect and was therefore corrected.  
\*9. Changes in expenditure are calculated using the following formula:  
Changes in expenditure = expenditure incurred during a base period (FY2017) – expenditure incurred during the current year (FY2018)  
\*10. - (minus) indicates an increase in expenditure.  
\*11. Environmental problems that affect external parties (such as the leakage of oil or chemicals)  
\*12. Number of petitions from external parties (such as those regarding smell and noise)  
\*13. Fixed-term (full-time) employees are not included.  
\*14. Consolidated values began to be reported in FY2018.  
\*15. Consolidated values began to be reported in FY2017.  
\*16. Percentage of employees who are still at the company as of April 1 in the year that is three years after they joined the company  
\*17. As of June 1 immediately after the end of each fiscal year. The statutory employment rate is 2.2% (was 2.0% until March 31, 2018).  
\*18. The subject period is calendar year (January to December).  
\*19. Injuries that resulted in one or more days' absence from work (excluding commuting injuries)  
\*20. Starting from 2018, all reported cases, including one which did not need to be addressed, are included.