



# Integrated Report 2019

For the year ended December 31, 2019

*GLASS FOR FUTURE*



**Nippon Electric Glass**

## On the Publication of the Integrated Report 2019

Since fiscal 2017, Nippon Electric Glass (NEG) has published an annual Integrated Report, which serves as a tool for continuously expanding the scope and level of disclosure while also allowing us to communicate with our stakeholders.

In our Integrated Report 2019, we disclose NEG's financial situation, corporate activities, and strategies for growth, especially the EGP2021 medium-term business plan. With regard to ESG (environmental, social, and governance), we will also introduce the more robust initiatives that we are pursuing, particularly those in the CSR priority areas of the environment and diversity and inclusion.

This easy-to-read, narrative report tells of our initiatives to enhance our corporate value along the way to becoming the world's leading manufacturer of special glass. We sincerely hope it gives you a better understanding of our group.

Motoharu Matsumoto, President

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At Nippon Electric Glass, our corporate philosophy is a reflection of our founding mission, a statement of our devotion to creating products infused with the very best of human civilization for the betterment of society.

### Our corporate philosophy

We strive to build a brighter future for the world by uncovering the unlimited possibilities of glass for more advanced creative manufacturing.

Firmly rooted in the traditions of our founding mission, the NEG corporate philosophy plots a path for our quest for sustainable growth. Thanks to material design, melting, forming, and processing technologies, glass can be infused with different properties for a broad range of functions. We are dedicated to unlocking glass's potential to make life better and more comfortable for people and communities the world over.

Our slogan **GLASS FOR FUTURE**

### Our vision

The world's leading manufacturer of special glass

Our goal is to become the world's leading manufacturer of special glass, with the best talent, the best technology, and the best creative manufacturing ability. At the same time, we strive to run our company in a way that inspires pride among our workers and enables us to make a genuine contribution to the community. The way we see it, creative manufacturing is achieved through state-of-the-art technological development, the highest quality standards, efficient production, and a steady supply of products, all underpinned by a fundamental dedication to environmental sustainability.

### Our values

<b>Customer first</b>	Everything is based on accurate understanding and complete satisfaction of customers' requirements.
<b>Get the job done</b>	We are dedicated to completing every task properly.
<b>Broad minds and open communication</b>	We think beyond existing norms and encourage frank communication among all departments and generations.
<b>High ethical standards</b>	We are bound to act ethically and in good faith in all situations.
<b>Consideration for the environment</b>	We are constantly aware of the need to be considerate of the environment, and strive to reduce our footprint.

## Editorial Policy

#### ● Organizations Covered

The Nippon Electric Glass Group's 11 domestic companies and 15 overseas companies are covered in this report. In cases where the coverage area of the data differs, we have indicated the appropriate coverage areas respectively.

#### ● Period of Reporting

Fiscal 2019 (January 2019 to December 2019). Some qualitative information regarding fiscal 2020 has also been included in this report.

#### ● Publication, Next Scheduled Publication

Issued in May 2020. Next scheduled issue in May 2021.

#### ● Editorial Guidelines

IIRC International Integrated Reporting Framework, GRI Standards, and others. The GRI Content Index can be found at <https://www.neg.co.jp/en/ir/archive/annual/>

#### ● Disclosure Policy

The Group Code of Conduct stipulates that our group will disclose necessary corporate information in a timely and appropriate manner to enhance communication with concerned parties. Following this policy, we will continue to disclose important information related to our group's activities to all stakeholders, including shareholders and investors, in a timely and appropriate manner.

#### ● Caution Concerning Forward-Looking Statements

Statements in this Integrated Report with respect to our group's plans, outlooks, strategies, and other statements that are not historical facts, are forward-looking statements involving risks and uncertainties.

## Message from the Chairman

# Celebrating our 70th anniversary

Staying focused on the future as we help resolve the challenges facing society today while applying our longstanding principles as a special glass manufacturer

## Origins as a special glass manufacturer

Last year, 2019, marked the 70th anniversary of Nippon Electric Glass's (NEG) founding. The company's origins trace back to 1949, when it was a division in Nippon Electric Company's Otsu Manufacturing Plant and was spun off as a separate company. It primarily manufactured glass bulbs for radio vacuum tubes. There are anecdotes from that time that describe how NEG stoically adapted to the frequent postwar blackouts by manufacturing everything by hand without any electricity. Nevertheless, despite the handcraft nature of its manufacturing operations, NEG's origins as a special glass manufacturer stem from those early vacuum tube glass products.

## Tirelessly putting ideas into practice to create products infused with the very best of human civilization

Special glass was first developed for use with the practical incandescent light bulb invented by Thomas Edison in 1879. While testing his incandescent light bulb, Edison discovered how vacuum tubes could be used as an electric control mechanism. Given that NEG started its existence as a vacuum tube glass manufacturer, it would seem that special glass manufacturing was the company's destiny.

Special glass is a product that must be manufactured at a consistently high quality and in a large volume suited to a wide range of uses. Given the insufficient power sources at NEG's founding, there was a large gap between the company's production capability and the advanced technology required to manufacture special glass. I believe what bridged this gap was the drive and ability of our predecessors who were the driving force behind NEG's development. In order to make high-quality special glass, a technological foundation enabling the melting and superior forming of glass according to application and compositional requirements is needed. Moreover, it is essential to develop equipment and facilities capable of performing this production in an efficient manner.

For the early members of NEG, who had neither the equipment, money, nor technology, I believe it was a tireless process of trial and error that yielded the integration of knowledge and an inquisitive mind that finally allowed them to overcome their limitations. Never shy away from a challenge, be ready to learn from mistakes, and, no matter what, have the tenacity to get the job done. These have been among the cornerstone principles of NEG for the entirety of its 70-year history.

Over time, NEG has branched out into the manufacture of various other special glass products, such as fluorescent light glass tubing, glass tubing for pharmaceutical and medical use, CRT glass bulbs, glass fiber for reinforced plastics, and glass for flat-panel displays. And as civilization has grown and developed, so too has the market for these products. It should also be noted that NEG has never ventured into a new product area in response to profitability. Rather, we venture into areas where we identify growing societal needs, regardless of how small the market may be at the time. This has sometimes meant persisting with products that are unprofitable until civilization develops to a point that it needs them. And when the market subsequently starts to grow, our business is able to hit the ground running with a polished product backed by tried and tested manufacturing technology. Hence, "creating products infused with the very best of human civilization" is an integral part of our corporate philosophy.

## Fulfilling our mission as a special glass manufacturer through creative manufacturing that generates new value

In the last 30 years, NEG has grown to become a global manufacturer of special glass with a firmly established market presence worldwide. However, in today's world, the focus of value has shifted away from physical things and onto information, as exemplified by the establishment of large IT platformers in the U.S. Developments in mobile devices and self-driving vehicle technology can be seen as heralding a new direction for civilization.

But this does not mean that physical things are now without value. The growing value of information creates a demand for physical things that provide new value through their facilitation of information. The development of products that realize this new value represents both an urgent challenge and significant business opportunity for NEG.

Another area where major change is underway is the global economy, which is becoming increasingly borderless and interconnected and, as a result, contributing to a host of challenges. Examples of these challenges include an increase in natural disasters on a global scale as a result of global warming and the spread of infectious diseases caused by the likes of the recent novel coronavirus. It is hoped that the development of new materials and resources will help in solving these challenges. And as a special glass manufacturer, there are many areas in which we can contribute, including through products that facilitate medical advancements, such as glass tubing for pharmaceutical and medical use and radiation-shielding glass, and products that facilitate better fire safety, such as high-performance fire-rated glass, as well as through the development of environmentally friendly products, such as glass fiber and phosphor-glass composite, and the manufacture of materials and resources that contribute to CO<sub>2</sub> reduction and environmental sustainability.

We will continue to apply our longstanding corporate principles and values as a future-focused, special glass manufacturer that is firmly committed to fulfilling its mission in addressing the challenges facing society.



Masayuki Arioka  
Chairman of the Board  
Nippon Electric Glass Co., Ltd.

# Our History of Creating Value

Amid the chaos following the Second World War, Nippon Electric Glass (NEG) was established in 1949 in Otsu, Shiga Prefecture, with a total of some 90 employees. We started out with the production of vacuum tube bulbs for radios. Then our product line-up expanded to glass for cathode-ray tubes (CRTs), glass fiber, glass for optical communication and electronic devices, and glass for flat-panel displays (FPDs). Over the years, our line-up has grown and evolved to match the needs of the times and to develop and provide glass products that contribute to the betterment of everyday life. We will continue with our efforts to uncover the unlimited possibilities of glass and seek to create new value for society through advanced creative manufacturing.

## Business

**1949**

Separated from Nippon Electric Company as an independent company (recognized as the date on which NEG was founded)



**1965**

Started production of black-and-white CRT glass (Started production of color CRT glass in 1968)



**1971**

Established the Notogawa Plant, equipped with state-of-the-art environmentally friendly facilities

**1973**

Company stock listed on the Tokyo Stock Exchange and Osaka Securities Exchange



**1980**

Established a special-purpose subsidiary for hiring persons with disabilities, the 6th company in Japan to do so

**1988**

Started CRT glass operations in the U.S. via a joint venture (which was to become a wholly owned subsidiary in 1993)



From  
**1949**

From  
**1960**

From  
**1970**

From  
**1980**

## Products

**1954**

Glass tubing for pharmaceutical and medical use



**1958**

Radiation-shielding glass

**1962**

Neoceram super heat-resistant glass-ceramics

**1963**

Glass for thermos flasks



**1970**

Powder glass

**1973**

Neopariés™ glass-ceramic building material

**1976**

Glass fiber



**1981**

Capillaries for optical connectors

**1987**

Alkali-free substrate glass for TFT-LCDs

**1988**

FireLite™ fire-resistant glass-ceramics for fire-rated doors



## Production technologies

**1951**

Automated production of glass tubing using the Danner process



**1961**

Automatic pressing process

**1967**

Heat-resistant glass produced using the rolling process



**1974**

All-electric melting furnaces with no fuel-derived CO<sub>2</sub> emissions brought online

**1976**

Glass fiber formation using the spinning process



**1981**

Capillary formation using the precision redrawing process

**1987**

Production of thin sheet glass by applying the continuous redrawing process



**1991**  
Established Nippon Electric Glass (Malaysia), NEG's first wholly owned overseas subsidiary

**1995**  
Established a CRT glass production base in the U.K.



**From 2000**  
Overseas expansion (South Korea, China, and Taiwan) of FPD glass business

**2007**  
Concluded a comprehensive university-industry collaboration agreement with the University of Shiga Prefecture (ongoing)



**From 2010**  
Strengthened glass fiber production capacity in Malaysia

**2011**  
Started production of glass tubing for pharmaceutical and medical use in Malaysia

**2015**  
Enacted a new corporate philosophy structure

**2016**  
Acquired the European glass fiber business of PPG Industries



**2017**  
Acquired the U.S. glass fiber business of PPG Industries



**Towards our vision of "the world's leading manufacturer of special glass"**

2019 marked the 70th anniversary of NEG's founding. As we work steadily towards the goals of our current medium-term business plan, EGP2021, our eyes remain firmly fixed on becoming the world's leading manufacturer of special glass.

**From 1990**

**From 2000**

**From 2010**

**From 2015**

**1995**  
Glass tubing for LCD backlights

**1997**  
Glass-ceramic ferrules for optical connectors



**2005**  
G-Leaf™ ultra-thin glass



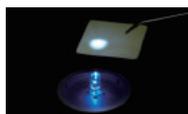
**2009**  
Glass ribbon



**2011**  
Dinorex™ glass for chemical strengthening



**2013**  
Lumiphous™ phosphor-glass composite



**2017**  
New glass tubing material for pharmaceutical and medical use (with high light-shielding properties)



**2017**  
Flat glass fiber



**2019**  
High-performance glass substrates for displays

**1993**  
Japan's first oxy-fuel firing furnaces are brought online, reducing CO<sub>2</sub> emissions and improving thermal efficiency



**1998**  
Float process

**2000**  
Production of FPD glass by applying the overflow process



**2000**  
Optical thin film coating

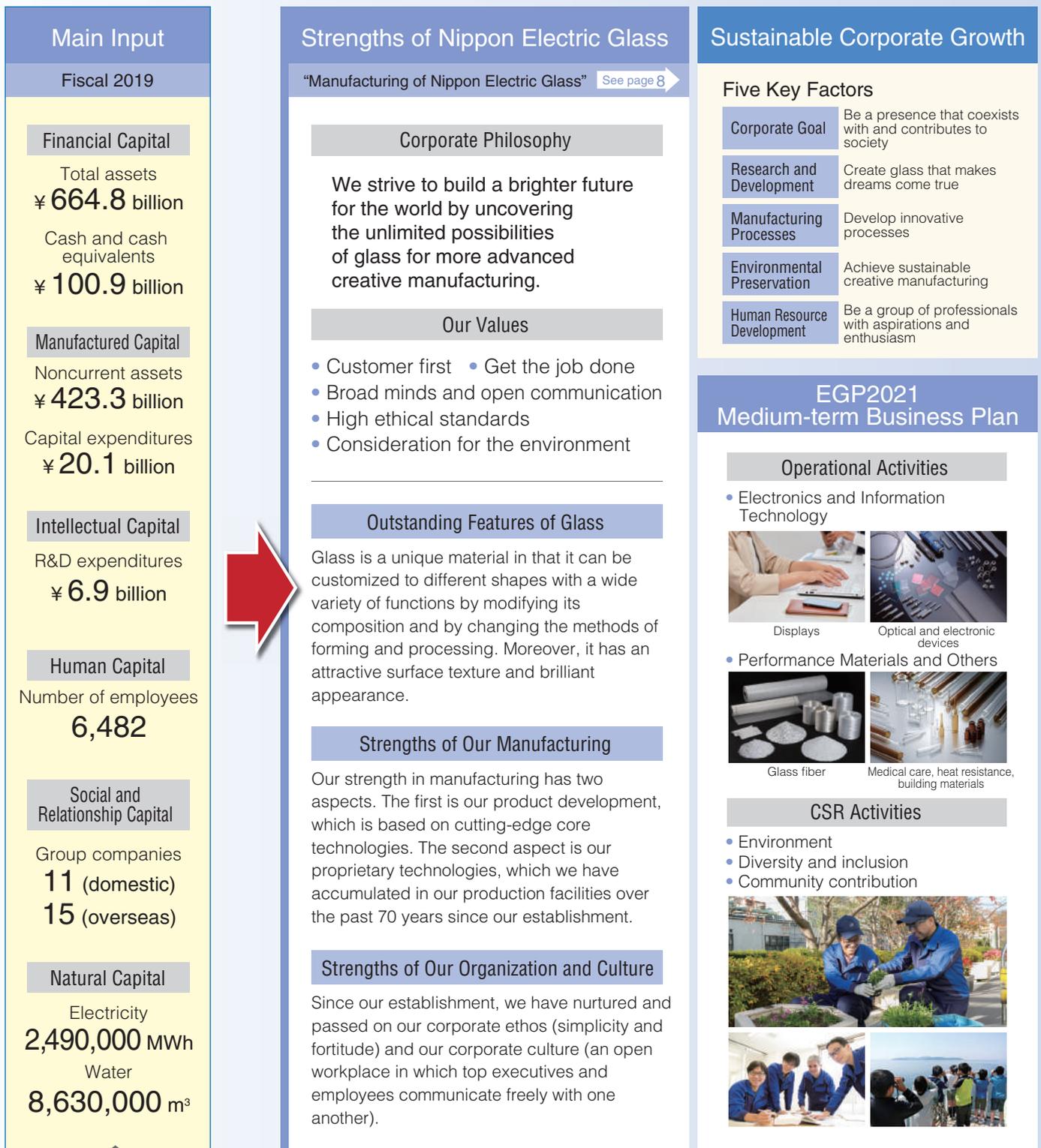
**2010**  
Ultra-thin glass and resin lamination



**2018**  
CRT glass production equipment certified as Mechanical Engineering Heritage (of Japan)



Utilizing six resources of capital for our business operations, we pursue the unlimited possibilities of glass while providing value to society through our innovative products. We will continue our efforts to realize sustainable societies.



Product Markets



Automotive and Transportation



ICT and Semiconductors



Medical Care



Displays



Lighting



Energy



Social Infrastructure



Home Appliances and Housing Equipment

Major Output

Fiscal 2019

Financial Results

Net sales  
¥ **257.1** billion

Operating profit  
¥ **15.9** billion

Cash dividends  
¥ **100**/share per year  
(DOE 2%)

Intellectual Property

Number of acquired patents  
**2,423**

Diversity and Inclusion

Percentage of employees with disabilities  
**4.1 %**

Health and Productivity Management  
Outstanding Organization

**Certified**  
**2 years in a row**

Environment

Sales of environmentally friendly products (p.45)  
Approx. ¥ **80** billion

Community Contribution

Number of participants in community activities  
Approx. **300** people

Creation of Social Value

As a global company, we also pursue the SDGs\*. We address issues in the context of each country in an effort to bring about safer, more affluent, and more comfortable societies.

Reduction of environmental impact

Utilizing natural energy

Innovations in ICT

Advancement in medical care

Improvements in safety and comfort of daily life

Advancement in transportation

Creating a robust and durable social infrastructure

A fair work environment and human resource training to develop tomorrow's leaders

Meeting society's challenges

Sustainable Development Goals (SDGs)



The world's leading manufacturer of special glass

Reinvestment

\* The Sustainable Development Goals (SDGs) were adopted in 2015 by the United Nations with the goal of achieving common targets by 2030 such as overcoming poverty and halting climate change.

Over the years, we have developed a wide range of glass technologies including material design and evaluation, melting, forming, and processing. These technologies are brought together in our production facilities, which are the foundation for the development of new applied technologies. It is through these technologies that we can create unique, high-function glass products.

## Extensive Glass Technologies

### Basic Glass Technologies

#### Material design and evaluation

Glass is a material that can incorporate almost any element. We seek to make high-performance glass by considering the features of each element and adjusting its composition. To create optimally functional glass, we repeatedly carry out each stage of production—modifying the composition, test melting, processing, and evaluating.

We developed technology for analyzing traces of RoHS-designated hazardous substances contained in glass. In 2006, we acquired ISO/IEC 17025 testing laboratory certification. Analysis results obtained in our accredited testing laboratory meet global standards, thereby ensuring the quality of our products.

#### Process design and development

##### Melting

Our melting technology and the design of our melting furnaces involve advanced and precise furnace operations—for example, controlling combustion and temperature while reducing environmental burdens. These technologies help us to produce high-quality glass.

##### Forming

One thing that sets our group apart from the competition is our wide range of forming technologies. These technologies enable us to achieve high dimensional accuracy and high productivity. We can use the most suitable forming method for each product and respond to the various needs of our customers.

##### Processing

New functions and features are given to glass through a variety of working processes. These processes include reforming by heating and softening, crystallizing by firing, coating films, precision cutting and polishing, and compounding with crystals or organic substances.

#### Commercialization

Through close cooperation among R&D departments, process technology departments, and departments in charge of commercializing new products, we strive to create “glass that makes dreams come true.”

### Applied Technologies

- Precision forming and processing
- Ultra-thin substrate forming
- Hybrid technologies (use of thin film and laminating with other materials)
- Ultra-large substrate manufacturing
- Crystallization

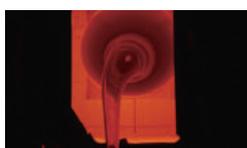
#### Value Chain

Planning → Research and development → Manufacturing → Sales

## Glass with a Variety of Forms and Functions



Substrate



Tube



Sphere



Fiber



Powder



Molded



Hybrid products



### Functions of special glass

#### Optical

Light absorption, wavelength conversion, optical thin film

#### Electromagnetic

Insulation, dielectric, conductive film, magnetism

#### Thermal

Heat resistance, fire prevention, low-temperature sealing

#### Mechanical

High strength by chemical strengthening or crystallization

#### Chemical

Acid resistance, alkali resistance, sustained release of chemicals

#### Others

Gas barrier, plastic and cement reinforcement

## Business Areas

### Expansion and reinforcement areas



#### Automotive and Transportation

- Lightweight materials
- Vehicle lighting
- Self-driving vehicles
- Electronic devices
- Displays
- Vehicle cameras



#### ICT and Semiconductors

- High-speed, large-capacity optical communication devices (5G compatible)
- Next-generation semiconductors (compact and high definition, advanced functions)



#### Medical Care

- Advanced pharmaceutical containers
- Advanced medical equipment and facilities



#### Displays

- Next-generation displays (high definition, thin and lightweight, flexible)

### Strategic development areas



#### Lighting

- Next-generation lighting (energy saving, high luminance, high output)



#### Energy

- Renewable-energy systems
- Secondary batteries



#### Social Infrastructure

- High-function fire-rated equipment
- High-performance structural materials (safe, durable, lightweight)



#### Home Appliances and Housing Equipment

- High-function home appliances, housing materials
- Multifunction wall materials

## Relationship with Society throughout the Value Chain

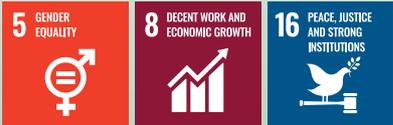
In each process of the value chain, we strive to increase the positive effects of our business activities and decrease the negative effects. We will continue to work hand-in-hand with our stakeholders in order to raise corporate value, solve society's problems, and achieve the SDGs.



- 5**
- Helping women reach their full potential
  - Support for raising the next generation

- 8**
- Diversity initiatives
  - Contribution to cutting-edge science and technology
  - Occupational health and safety activities, work-style reforms

- 16**
- Formulation and dissemination of our corporate philosophy structure



- 3**
- Glass tubing for pharmaceutical use
  - Radiation-shielding glass for patient diagnosis
  - Flat-panel detector glass for X-ray diagnostic devices
  - Antimicrobial glass

- 7**
- Resin-reinforced glass fiber to reduce the weight of automobiles
  - Resin-reinforced glass fiber for wind turbine blades
  - Glass substrates for FPDs, G-Leaf™ ultra-thin glass
  - Lamion™ lightweight composite material
  - Lumiphous™ phosphor-glass composite

Note: See page 45 for details on our environmentally friendly products.

- 9**
- ARG Fiber for reinforcement in construction
  - Development and sales of glass for optical communication and electronic devices

- 11**
- Lamion™ for train station platform doors
  - FireLite™ fire-rated glass for fireproof public facilities
  - Glass fiber for reinforcement in construction
  - Glass fiber for resin railroad ties



Sales

Product use

Final product disposal



- 12**
- Recycling water and raw materials
  - Capture and reuse of exhaust gas
  - Pursuit of highly efficient manufacturing
  - Extending the life of facilities

- 13**
- Global warming mitigation measures (e.g., reduction of CO<sub>2</sub> emissions)
  - Environmental education

- 15**
- Supporting local forestry association activities
  - Removal of non-native fish species in Lake Biwa
  - Forest conservation around factories

- 16**
- Thorough compliance
  - Human rights initiatives



- 12**
- Recycling packaging

- 13**
- Modal shift in shipping
  - Joint shipping with customers (e.g., reciprocal utilization of trucks)



- 12**
- Reuse of waste glass

## Uncovering the Unlimited Possibilities of Glass

Glass is a unique material that can be customized into different shapes with a wide variety of functions by modifying its composition and altering the various forming and processing methods used. By combining our accumulated glass technologies with original ideas, we continue to deliver a variety of high-performance glass products matching contemporary needs.

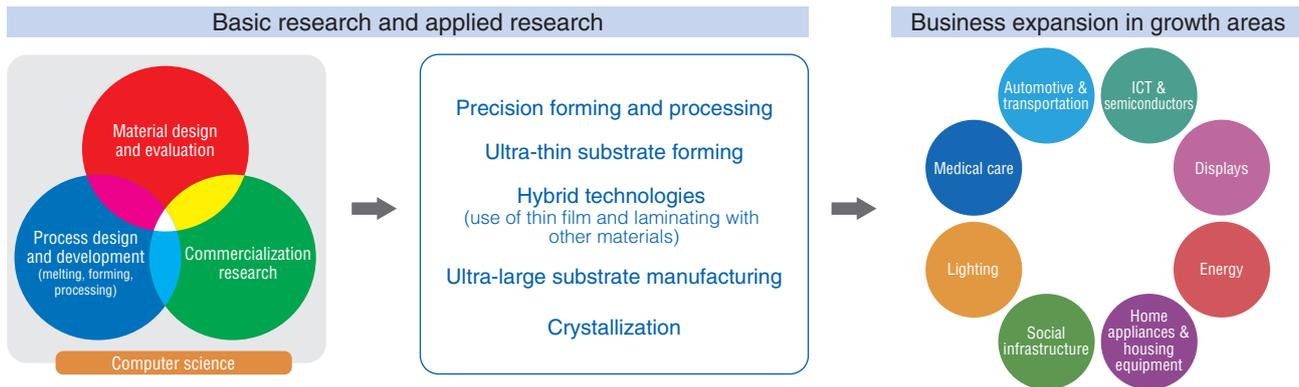
### R&D Policy

We pursue basic research encompassing material design and evaluation, process design and development, commercialization built on trial production and product refinement, and computer science, which includes ICT and AI-driven data analysis. With this basic research we combine applied research in areas including precision forming and processing and ultra-thin substrate forming. We aim to develop glass products that provide value for society, as we focus on expanding business in growth areas such as automotive, ICT,

medical care, and displays.

Under our EGP2021 medium-term business plan, we are making research and development a top priority. By incorporating product, technology, and manufacturing processes into a single, integrated development structure, together with more robust marketing functions and other measures, we facilitate stronger collaboration among our different departments to create “glass that makes dreams come true.”

### R&D and Business Development



### R&D Organization

Our staff function departments (Research & Development Group, Process Development & Engineering Group) carry out R&D such as material design and development, property evaluation, and process design and development. Meanwhile, the line departments carry out practical development such as commercialization of new products, product improvement, and devising advanced functions.

material science, the foundation of glass research. The Corporate Strategy Division supports other departments in information analysis and planning.

The staff function departments and the line departments collaborate on strategic development aimed at solving medium-term development issues. The Fundamental Technology Division works with institutions around the world in

Also, as part of our measures to realize EGP2021 targets, we have created an integrated development structure incorporating the three departments responsible for research and development, process technology, and new product commercialization. In conjunction with this, we have begun implementing B2B marketing activities, which utilize a cross-sectional marketing structure.

### Collaboration between Departments



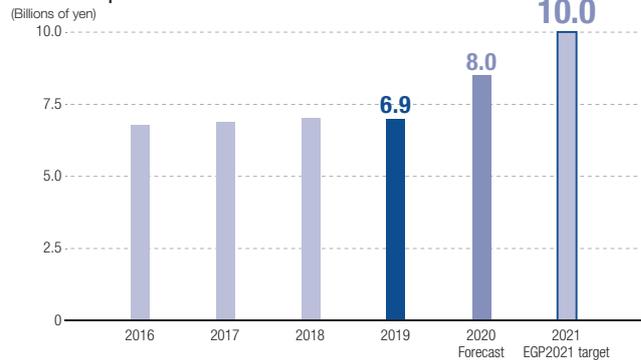
## R&D Investment

We are working tirelessly in R&D in order to realize our corporate philosophy: "We strive to build a brighter future for the world by uncovering the unlimited possibilities of glass for more advanced creative manufacturing." We also aim to integrate and evolve our manufacturing processes and product development, and reflect the results in our management strategy in order to realize medium-to-long-term growth. Our R&D expenditure was 6.9 billion yen in fiscal 2019. We will continue boosting our R&D activities.

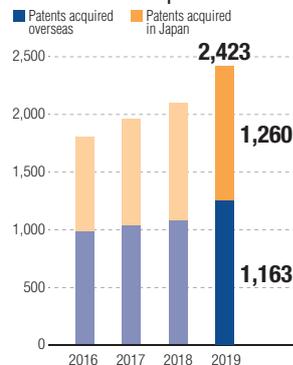
## Intellectual Property

At NEG, our approach to intellectual property is to pursue systematic synergy between glass manufacturing and glass product and process R&D in order to generate technological results that we protect and utilize as intellectual property providing us with competitive advantages, which contribute to the development of the company. And we are increasing the number of patents we hold domestically and overseas, focusing on key business areas and areas of future business development, so that we will have a network of patents to effectively support our business.

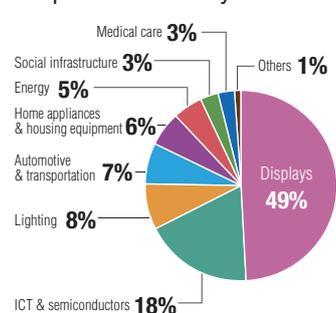
## R&D Expenditure



## Number of Acquired Patents



## Acquired Patents by Area



## R&D NEWS

### New product

Announced July 18, 2019

## World's highest-performance infrared lens

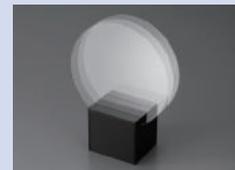


The growth of the infrared camera market in recent years has raised demand for high-performance, mass-produced lens. NEG's infrared transmitting glass product raises the bar in terms of thinner, high-performance infrared lenses by offering superior infrared transmitting performance than existing products while also being readily suited for mass-production.

### New product

Announced October 10, 2019

## Substrate glass for smart glasses



The market for smart glasses is expected to grow as technologies such as augmented reality and mixed reality become increasingly more advanced. This glass product achieves the world's highest refractive index and internal transmittance of any substrate glass for smart glasses, thereby facilitating the development of devices that are thinner and lighter with better visibility.

### New product

Announced November 21, 2019

## 3D printer paste for high-precision ceramic modeling



Ceramic materials are one category of modeling materials used in 3D printing. NEG has developed a paste that makes it possible to perform high-precision ceramic modeling. Mixing this paste into the modeling material allows for precise control over the curing width and depth of the ultraviolet curing resin which, in turn, allows for complex and detailed modeling.

### New product

Announced December 3, 2019

## Lead-free low-melting-point glass frit seals at 380°C



Glass frit is valued for being strongly adhesive, highly airtight, and weather-resistant and is used in a wide range of sealing applications for electronic components. NEG's lead-free glass frit is capable of low-temperature sealing (380°C) while providing a stable glass composition and sufficient weather resistance.

## Glass for Optical and Electronic Devices

Glass for optical and electronic devices is used mostly in places where its application goes unseen. However, as a material of indispensable value to technological progress, it is used in a host of different fields, including home appliances, smartphones, automobiles, semiconductors, and telecommunications infrastructure.

General Manager, Electronic Products Division, Production  
Takuji Oka



### Main Products and Applications

NEG's optical and electronic device-related products comprise the following five categories: powder glass, glass tubing, glass substrates, optical communication-related products, and phosphor-glass composite.

#### Powder Glass and Glass Tubing

The electrical insulation and chemical stability of these glass products are utilized for a wide range of applications, such as providing a protective covering for semiconductor elements, sealing material for compressor terminals in air conditioners and other devices, and encapsulating material for various types of sensors.



Powder glass



Glass tubing

#### Optical Communication-related Products

NEG's product range includes lenses, prisms, and precision capillary tubes, all of which have a high level of dimensional precision down to the micron level. These products are put to a variety of different uses, such as in trunk lines including undersea cables, mobile phone base stations, and household optical communication devices.



Optical communication-related products

#### Glass Substrates

Cover glass for CMOS image sensors with high transparency and glass with extreme flatness used in highly functional semiconductor manufacturing are available.



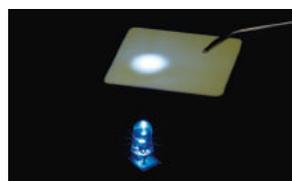
Cover glass for image sensors



Glass for supporting semiconductor wafers

#### Phosphor-glass Composite

This glass is a composite containing a phosphor powder dispersion and is used to convert blue LED light into white light. Because of its high thermal resistance, it is widely adopted for headlights and other applications where strong light is required.



Lumiphous™ phosphor-glass composite



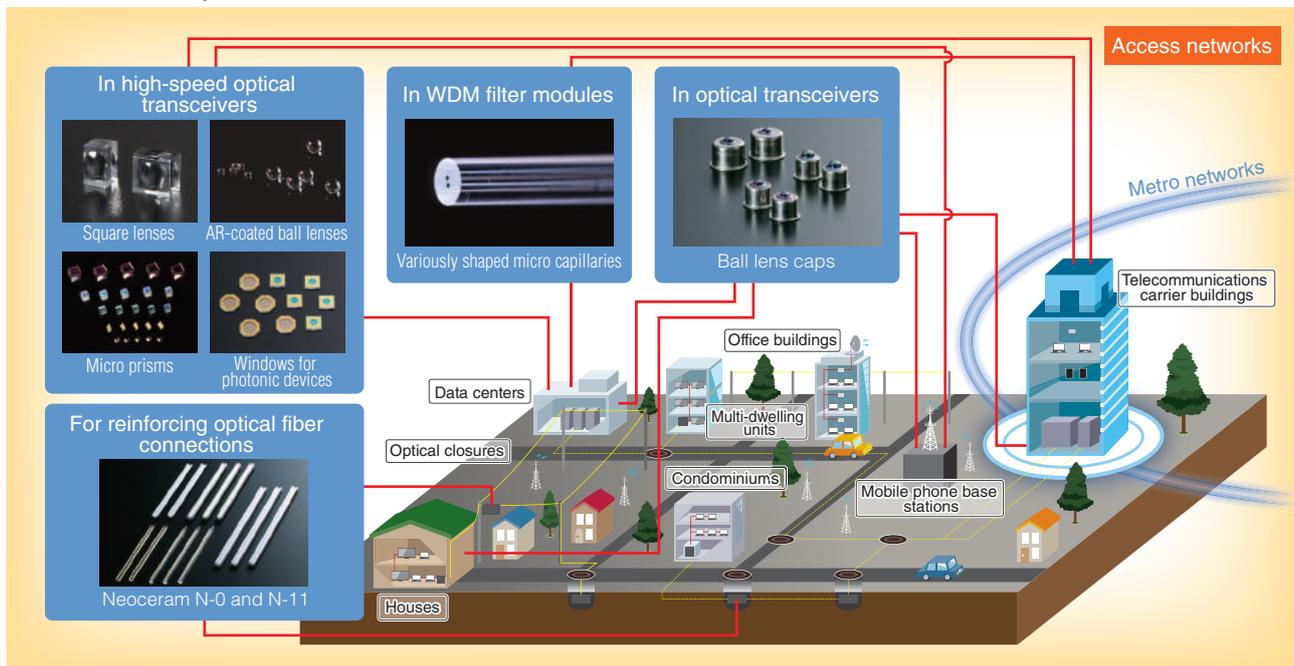
Used in an automobile LED headlight

### Glass Used in Optical Communication Networks

In the ICT industry, the widespread adoption of smartphones has driven demand for larger and faster data transmission, and in 2019, 5G service was launched as the next-generation telecommunications standard. These 5G systems comprise optical networks that transmit to base stations, the transmission of radio waves from the base stations to the user end-point, and the smartphones, IoT devices, and terminal devices used at those end-points. In order to facilitate the efficient transmission of large volumes of data to base stations within the optical network, a variety of high-precision micro capillaries manufactured in a variety of different shapes are utilized.

In addition, the optical transceivers, which perform interconversion between optical and electrical signals during information transmission are equipped with a variety of lens components that contribute to greater transmission efficiency and device miniaturization.

## Glass Used in Optical Communication Networks

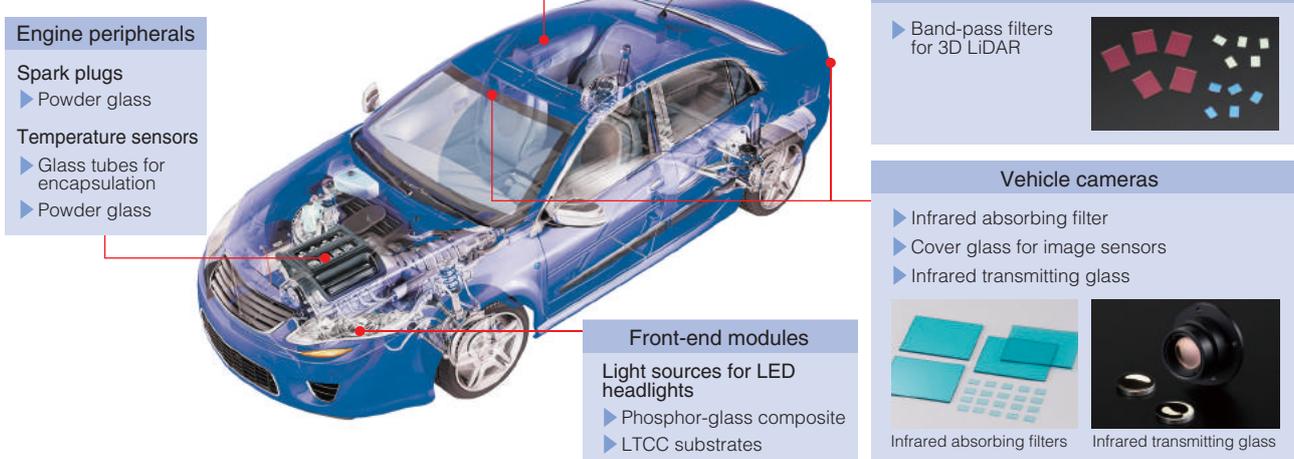


## Developing On-board Vehicular Applications

Currently, with the exception of optical communication-related products, all categories of glass for optical and electronic devices manufactured by NEG have on-board vehicular applications. With the automotive industry undergoing the sort of transformation that only comes along once in a century, CASE is being developed as the standard bearer for next-generation technological development. And it is the field represented by "A" (Autonomous), in particular, where NEG's glass for electronic devices is expected to be put to use.

Thanks to the high quality and smoothness achieved as a result of NEG's advanced glass melting and thin film coating technology, NEG's image sensor cover glass helps ensure the high performance and stability of image sensors utilized for self-driving operations. In addition, band-pass filters for use in LiDAR sensors capable of imaging objects in 3D, and infrared transmitting glass used in infrared cameras capable of identifying people even at night, are being developed. In particular, NEG's infrared transmitting glass offers superior infrared transmitting properties compared with germanium single crystal or chalcogenide glass, thereby enabling a brighter, clearer image.

## Glass Used in On-board Electronic Devices



Moving forward, NEG is strengthening its marketing functions to ensure a more comprehensive understanding of customer needs, and this, in turn, will be used to speed up the entire process from developing new products to bringing them to market. To achieve this, NEG will rely not only on technical integration in-house but will also actively seek out cooperative ventures, tie-ups, and other strategic alliances with outside entities possessing innovative technologies.

## Working as One to Pursue Measures Aimed at Achieving the Targets of the EGP2021 Medium-term Business Plan

Reviewing the tough results of EGP2021's first year and explaining the new initiatives and approaches targeting further growth



*M. MATSUMOTO*

**Motoharu Matsumoto**  
President  
Nippon Electric Glass Co., Ltd.

## Performance review for fiscal 2019

Results for fiscal 2019, the first year of the EGP2021 medium-term business plan, show a decrease in both sales and profits. Net sales declined 14.4% from the previous fiscal year to 257.1 billion yen and operating profit declined 35.9% from the previous fiscal year to 15.9 billion yen.

These tough results are due primarily to environmental changes affecting our main businesses. With regard to display glass business, although the market itself is growing moderately, operational adjustments among our panel manufacturer customers have had a negative impact. Also, with regard to glass fiber business and its associated production and supply structure comprised of four key bases worldwide (Japan, Malaysia, Europe and the U.S.), stagnation in the automotive market and other areas caused sales to decline, which forced the bases to make major production adjustments and, in turn, constrained profits.



## Revising the medium-term business plan and revitalizing performance based on policies in priority areas

In light of the fact that the results for fiscal 2019 and the outlook for the future are below initial projections, the performance targets of the EGP2021 medium-term business plan have been revised to 300 billion yen for net sales (revised from 350 billion yen), 25 billion yen for operating profit (revised from 35 billion yen), and an operating margin of 8% (revised from 10%). Despite concerns about the long-term effects of the novel coronavirus, we remain steadily focused on the four priority areas of EGP2021 while also ensuring that we can flexibly adapt to changes in the external environment.

### 1. Research and development: Strengthening the development system and establishing a new marketing structure

Multiple new products have been released using the new, three-group development structure, which integrates the product, R&D, and manufacturing process departments.

## Outline of the EGP2021 Medium-term Business Plan

### Basic Policy

Pursue further growth toward becoming the world's leading manufacturer of special glass

### Slogan

Strong Growth—Raise Aspirations and Break through Walls

Growing our operations, our human resources, our technological foundation, and our developmental strengths. Making "strong" corporate fundamentals our priority.

### Priority Areas

(1) Research and development (2) Business strategies (3) Strategic investments (4) CSR

### Performance Targets

Net sales ¥300 billion

- Electronics and Information Technology: ¥150 billion
- Performance Materials and Others: ¥150 billion

Operating profit ¥25 billion

Operating margin 8%

These new products are developed from seed ideas; thus, customers need to be made aware of how they can make use of them. Since we believe that the key to this lies in marketing, we have established a new, cross-sectional marketing structure to promote product commercialization.

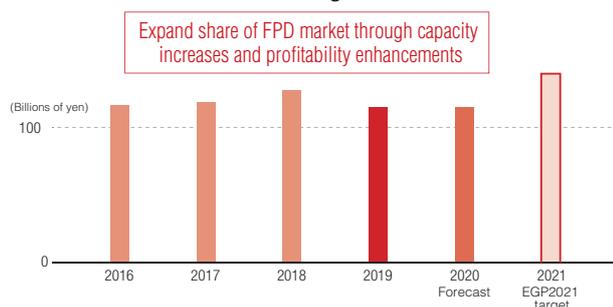
Currently, our efforts are focused on dedicated prototype equipment. In addition to large-scale prototype furnaces, we are developing systems and structures to enable trial production of a variety of products. Also, we are making efforts focused on materials development and process improvement, such as introducing equipment that will enable us to perform previously outsourced evaluations quickly and internally and making effective use of big data. Research and development expenditures for fiscal 2019 were 6.9 billion yen. We anticipate that they will grow to 8.0 billion yen for fiscal 2020 and 10 billion yen for fiscal 2021.

### 2-1. Business strategies: Display glass business Improving equipment performance

In order to strengthen our presence in the expected growth market of China, it is extremely important that we make a focused effort to expand sales. We are building relationships of trust with Chinese customers, which will lead to sales expansion. With regard to equipment and facilities, we have seen a tremendous improvement in performance over the past few years. This has led to a tangible increase in our competitiveness in productivity, quality, and various other areas. Also, we are pursuing strong investment in China, which we believe will help solidify our position in the market, such as investment in production capacity increases at the Xiamen facility, which is responsible for melting and forming.

Moving forward, we will continue to utilize our world-class production processes to create various new products; for example, manufacturing high-performance display glass substrates with exceptional dimensional stability under high-temperature process, and cover glass (glass for chemical strengthening) with superior properties. We will also concentrate our efforts on developing and expanding sales of such new products that are highly responsive to market needs.

Net sales for FPD glass business

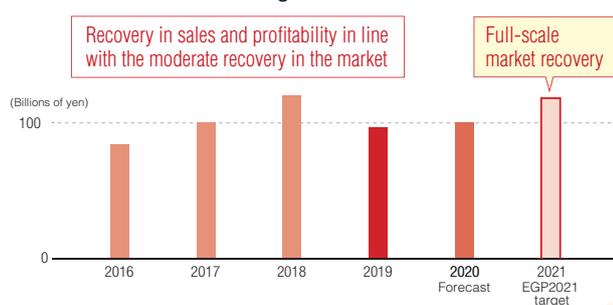


## 2-2. Business strategies: Glass fiber business Improving productivity and strengthening development

We will revise our production systems, manufacturing processes, and product mix globally. The pressing concerns for Europe and the U.S., where we recorded large impairment losses, are improving productivity and achieving profitability. In the U.S., we will consolidate our three production facilities into two. Furthermore, we will take steps such as introducing automation equipment in order to ensure more stable quality and increased productivity. In Europe we are implementing measures to streamline our organizational structure.

Additionally, we are working to expand the customer base for our high-value-added products, such as high-modulus glass fiber and flat glass fiber. We are also working to bolster the development of new, more market needs-focused products.

Net sales for glass fiber business



## 3. Strategic investments: LTCC for the 5G era

NEG launched a low-temperature co-fired ceramics (LTCC) joint venture in October 2019 with the aim expanding business in the optical and electronic devices market. This was the realization of a longstanding goal to incorporate not only glass materials but also devices within our manufacturing. LTCC are used in a wide range of areas, including automobiles, telecommunications, and semiconductor manufacturing, thanks to their superior electrical properties (e.g., low dielectric and low resistance properties). As the world moves into a new, 5G era, we anticipate their importance will grow even further. We are currently working to strengthen production capacity in order to accommodate growing demand.

With regard to M&A and corporate alliances, we are exploring a variety of different options. Moreover, we want to ensure that we remain ready and able to handle the same broad scope of business as we always have.

## 4. CSR: Pursuing sustainable growth

Our three priority themes are the environment, diversity and inclusion, and community contribution. Of these, we have noticed a significant change in global attitudes toward the environment, as evidenced by a marked increase over the course of fiscal 2019 in the level of attention paid to greenhouse gas emissions. Although the business we undertake is energy-intensive, we actively work to reduce CO<sub>2</sub> by utilizing glass manufacturing processes that minimize greenhouse gas emissions to a degree that sets us apart from other glass manufacturing companies. These processes have shown themselves to be quite effective, and we are working on introducing them across all of our main products.

Our Vision  
The world's leading manufacturer of special glass

EGP2021 is positioned as our initiative to realize five key factors



EGP2021

EGP2018

With regard to diversity and inclusion, we remain committed to our existing efforts, particularly those aimed at increasing the percentage of employees with disabilities in our workforce. We are also pursuing next-step initiatives, such as expanding telecommuting and flextime options, in order to create an environment where employees can feel a greater sense of satisfaction in their work. We are also investing in greater training and educational opportunities for employees. This applies not only to younger employees, as evidenced by the threefold increase in time allocated for manager training. We implement training that aligns with the life stages of employees, such as those for employees age 50 and up, which is designed around considerations of life in old age.

With regard to community contribution, we will continue to actively pursue educational and professional development initiatives, such as the collaborative arrangement we maintain with the University of Shiga Prefecture and the various educational support initiatives we undertake for local schools.

### Strengthening corporate governance

With regard to corporate governance, we currently have three outside directors who contribute to NEG's efforts in improving its governance system and effectiveness. In order to ensure that outside directors have a firm understanding of the business situation at NEG, they are provided with all of the information they need to perform their duties as outside directors. This includes not only being part of the deliberations of the board of directors but also having regular interviews with executive officers and general managers, and having access to the minutes of Management Committee meetings and other important meetings. And the outside directors are always candid with the feedback they provide us. I always appreciate the range and depth of advice they are able to provide based on their collective knowledge and experience.

Another way in which we are making our corporate governance more robust is via the Nomination and Compensation Advisory Committee. This was established on March 27, 2020 to ensure the transparency and objectivity of not only representative director appointment and dismissal but also the determination of remuneration for directors.

### Aiming to achieve employee satisfaction and contribute to society

My aim is to ensure that our employees can honestly say, "I'm glad to be working for NEG." If our employees are not satisfied with their jobs, it prevents us from being able to provide quality products and services. Also, being able to take pride in the fact that their jobs and the products created by them are benefiting the world is a contributing factor in employee satisfaction. I am proud of the fact that NEG is at the forefront of its industry in terms of environmentally friendly manufacturing, as demonstrated by its reuse of glass and its reduced greenhouse gas emissions. Through the incorporation of our refined technology into services and solutions, which we offer to glass companies worldwide, we can contribute to a reduced environmental footprint as well as expand business opportunities for NEG.

### To shareholders and investors

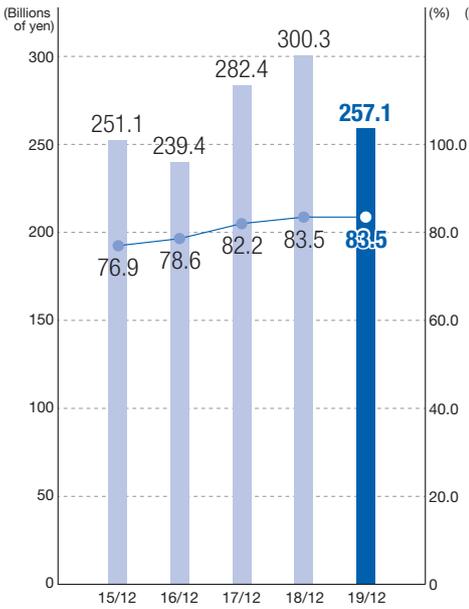
As a company with a strong financial foundation, returning profits to shareholders is a key management priority, and one of our fundamental policies is to provide stable, ongoing dividends to investors. Having said that, although the dividend for fiscal 2019 is a deferment from the previous year, we maintain a flexible approach to providing returns to our shareholders, in addition to stable dividends, depending on the progress made on the medium-term business plan.

Fiscal 2020 is the second year of EGP2021. We look forward to your ongoing support, as we at the NEG Group do our utmost to turn around our business performance and achieve our targets.

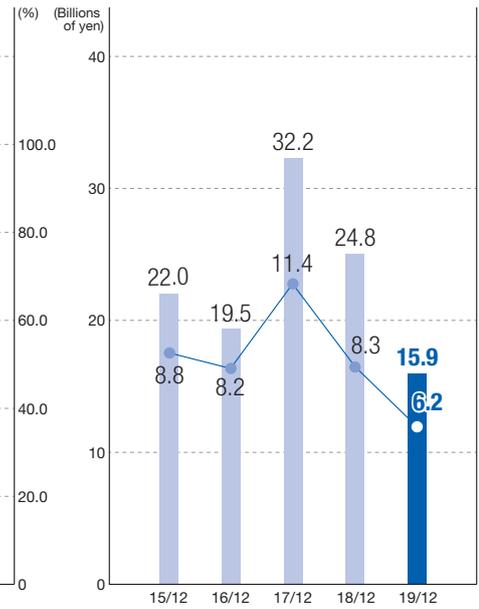


## Financial Highlights (Consolidated)

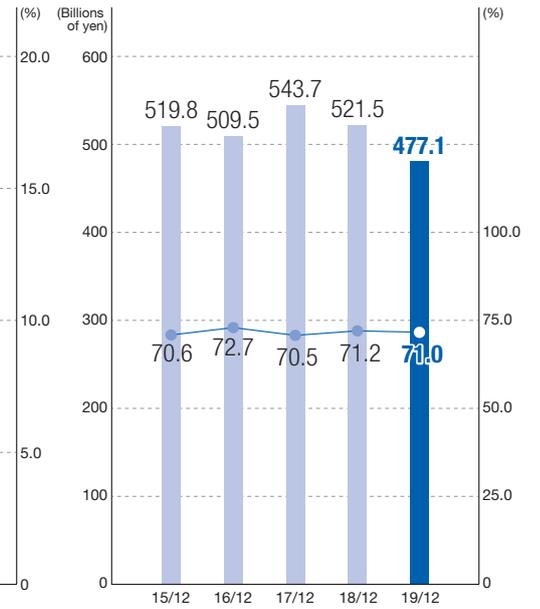
### Net Sales, Ratio of Overseas Net Sales



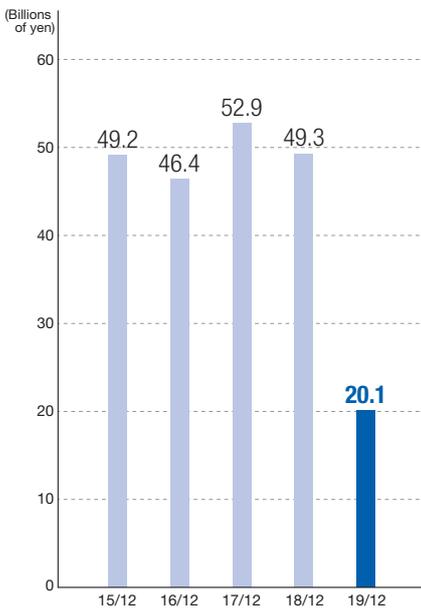
### Operating Profit, Operating Profit Ratio



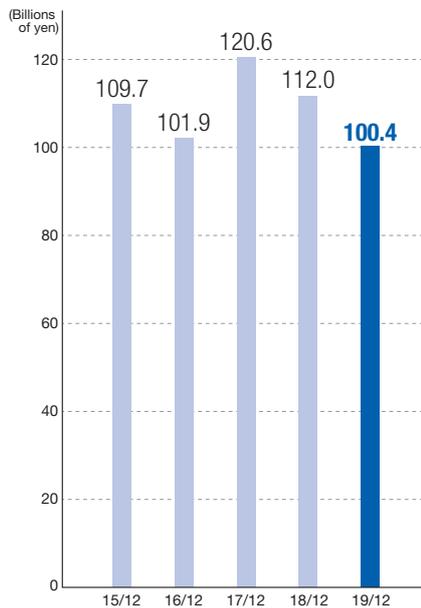
### Net Assets, Equity Ratio



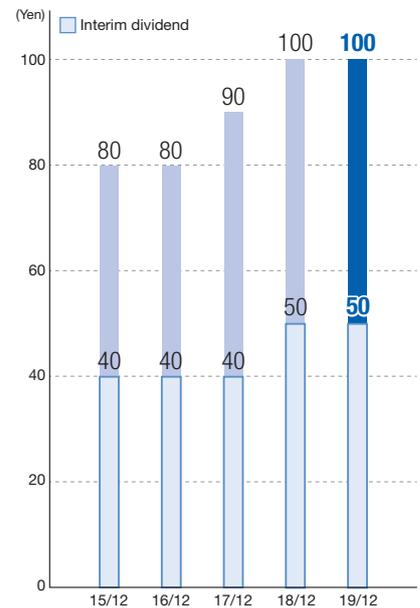
### Capital Expenditures



### Interest-bearing Debt



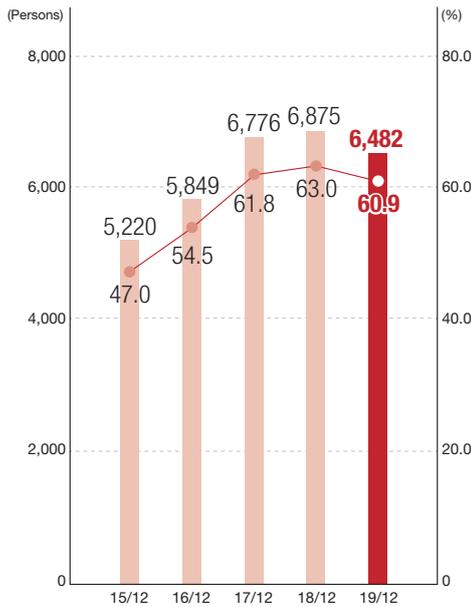
### Cash Dividends per Share<sup>\*1</sup>



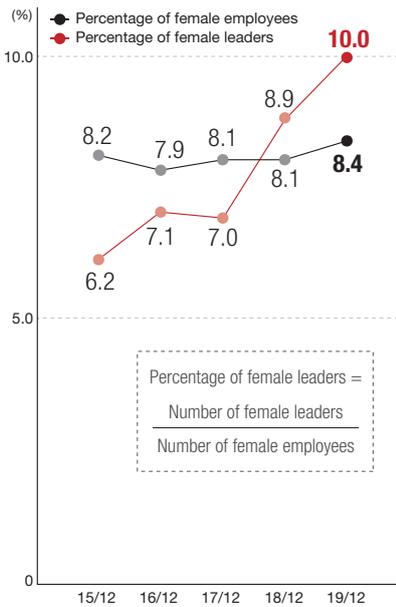
\*1: Per share of common stock amounts are retroactively adjusted for subsequent stock consolidation. On July 1, 2017, common shares were consolidated at a ratio of 5 to 1 based on the number of shares held by shareholders of record as of June 30, 2017.

## Non-financial Highlights

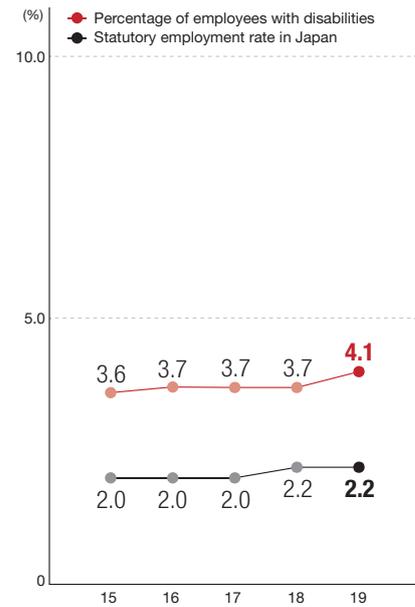
Number of Employees,  
Percentage of Overseas  
Employees (consolidated)



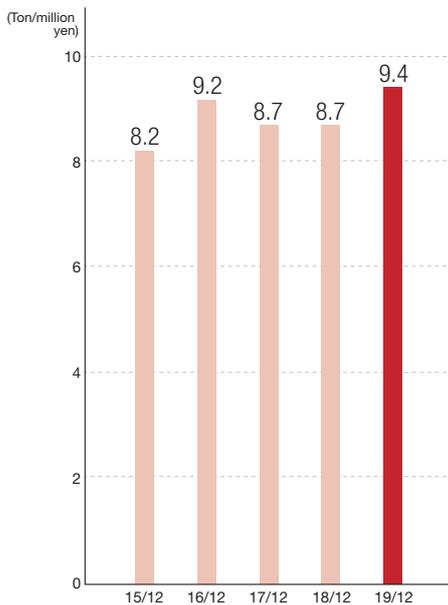
Percentage of Female  
Employees and Female  
Leaders (NEG)<sup>\*2</sup>



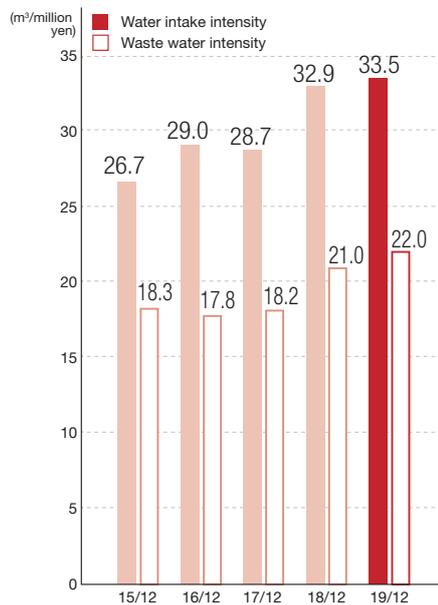
Percentage of Employees  
with Disabilities  
(NEG and consolidated subsidiaries in Japan)



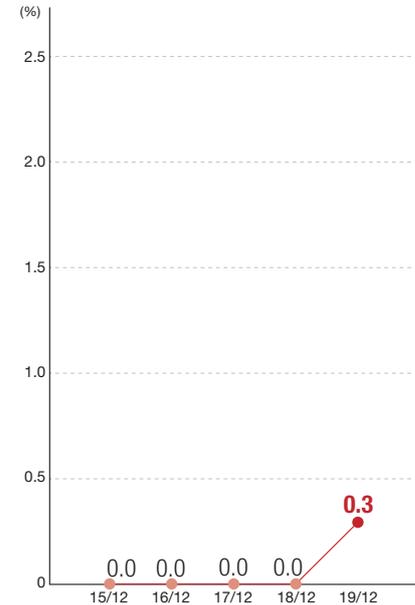
CO<sub>2</sub> Emissions Intensity  
(to consolidated sales)



Water Intake/Waste Water  
Intensity (to consolidated sales)



Industrial Accident  
Frequency Rate (NEG)<sup>\*3</sup>



<sup>\*2</sup>: A female leader is a female employee who oversees and manages subordinates.  
<sup>\*3</sup>: Counted January–December every year.

## Electronics and Information Technology



## Display-related Business

### Main Products

Glass for flat-panel displays (FPDs)	Dinorex™ glass for chemical strengthening
Manufactured by the overflow process, this glass substrate has an exceptionally smooth surface. It is used in displays such as flat-panel TVs and mobile devices.	This glass is used as cover glass in smartphones, tablets, and other mobile devices, protecting the device screens against scratching, cracking, and impact damage.

### Business Overview

In fiscal 2019, shipments of glass for FPDs were down compared with the previous fiscal year due to a decrease in operations at panel manufacturers during the second half of the fiscal year. However, progress was made on the development of new products with exceptional dimensional stability under high-temperature process, and on the development of innovative process technology that realizes higher productivity and less energy consumption.

Glass for chemical strengthening saw a decrease in shipments due to stagnant demand among smartphone manufacturers and others, but there were new adoptions for on-board vehicular displays. Progress was also made on the development of new products with superior properties, with work on samples underway. Demand for solar cell glass was sluggish.



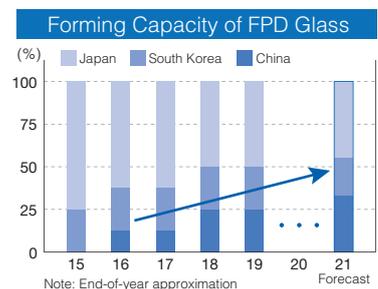
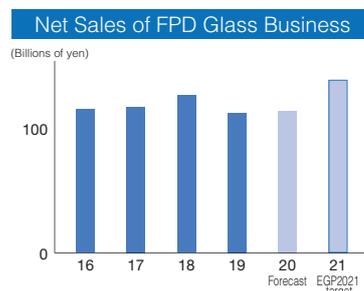
Example of Dinorex™ application (Photos: Toyota Motor Corporation)

In terms of gains and losses, despite a moderate drop in product pricing and other factors such as prior investments in process technology, the positive impact of NEG's longstanding efforts to improve productivity helped to stabilize profitability.

## Fiscal 2020 Outlook and EGP2021 Medium-term Business Plan

For fiscal 2020, we are working to increase sales, especially through sales expansion in the second half of the year.

For EGP2021, we are pursuing sales expansion centered on the growing Chinese market and introducing new process technology across all of our main products. Towards this target, we intend to strengthen our business base in China and have therefore decided to increase the production capacity of our base in Xiamen, China. We are aiming to bring new equipment on-line in the first half of 2021, which will contribute to company earnings.



**Akihisa Saeki**  
Director and Senior Vice President, Group General Manager of Display Glass Group

Net Sales (year)



Net Sales (quarter)



## Optical and Electronic Device-related Business

### Main Products

#### Glass for optical devices

This glass is used to extract specific wavelengths from optical signals and to split optical signals. It plays an important role in the field of ICT.

#### Glass for electronic devices

A vast range of applications are available, including cover glass for image sensors and powder glass, glass paste, precision glass tubes, and phosphor-glass composite in the electronic components in home appliances, automobiles, industrial machinery, and the like.

### Business Overview

In fiscal 2019, glass for electronic devices fell below expectations in shipments of powder glass, precision glass tubes, and other products amidst continuing economic uncertainty and a market slowdown in such areas as home appliances and automotive components. Shipments of phosphor-glass composite remained solid, especially for car headlights. Also, in October 2019, NEG launched a joint venture in low-temperature co-fired ceramics (LTCC).

Glass for optical devices-related business remained sluggish due to a slowdown in investment in FTTH, data centers, and other areas, as well as a lack of full-scale investment in 5G (next-generation telecommunications standard). During the latter half of the fiscal year, there was moderate recovery in the telecommunications infrastructure market, helping to boost shipments of products for lens components, optical fiber connection components, and other components.



LTCC Materials Co., Ltd.



LTCC products

### Fiscal 2020 Outlook and EGP2021 Medium-term Business Plan

In fiscal 2020, NEG is introducing new products geared towards the 5G, telecommunications infrastructure, and CASE (Connected, Autonomous, Shared/Service, Electric) fields and is pursuing growth in these markets. Our LTCC joint venture business will also contribute to sales throughout the year. LTCC products are used in a wide range of areas, including automobiles, communications devices, and semiconductor processes. They are therefore seen as an area of future growth. In conjunction with all of these, we are pursuing early commercialization of newly developed products as a means of facilitating sales recovery.

EGP2021 demands more aggressive implementation of these efforts. Therefore, stronger collaboration between R&D departments and process development departments, in conjunction with collaboration with our newly established marketing structure, will be used to speed up the entire process from product development to product commercialization in order to achieve our planned targets.



**Masahiro Kobayashi**

Vice President and Group General Manager of Electronic Products Group

Performance Materials and Others



Glass Fiber-related Business

Main Products

Glass fiber

Glass fiber is a material made up of thin glass filaments ranging in diameter from a few micrometers (μm) to around 10 or so micrometers. It has a high mechanical strength and produces exceptional composite materials. It is used in a variety of applications, including reinforced plastics and reinforced cement products.

Business Overview

In fiscal 2019, shipments of glass fiber declined as a result of continuing stagnation in automotive component-related markets and other markets, as well as less-than-anticipated housing-related demand. We responded to this by making operational adjustments at our production bases in Japan, Malaysia, the U.S., and Europe. However, profits were lower than the previous fiscal year as a result of such factors as lower net sales, higher costs caused by lower operating rates, and delayed improvement in revenues of U.S. and European subsidiaries. Additionally, an impairment loss mainly on tangible fixed assets and goodwill of U.S. and European subsidiaries was recognized.

Status of Global Operations



Note: Using 2016 production capacity as an index of 1

Production consolidation of U.S. and European bases



Consolidating 3 bases into 2



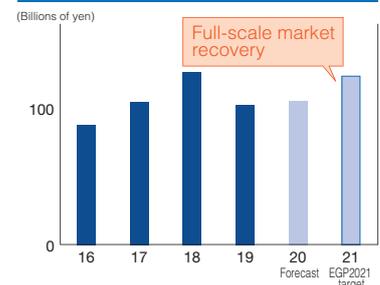
Stronger 2-base collaboration structure

Fiscal 2020 Outlook and EGP2021 Medium-term Business Plan

In fiscal 2020, the largest challenge is to improve our competitiveness by revising our production systems, manufacturing processes, and product mix globally. Of particular importance is the consolidation of our U.S. production bases from three to two, in conjunction with organizational streamlining and productivity improvement in Europe, in order to restore profitability as soon as possible. On top of this, we are working to expand our customer base for high-value-added products, such as flat glass fiber and special glass fiber.

We see fiscal 2020 as a year for institutional reform and improvement. By improving productivity and competitiveness, as well as expanding sales, we are putting ourselves on track to meeting the targets of the EGP2021 medium-term business plan when markets recover in fiscal 2021.

Net Sales of Glass Fiber Business



Norio Nakamura  
Senior Vice President and Group General Manager of Glass Fiber Group

Net Sales (year)



Net Sales (quarter)



## Medical Care, Heat Resistance, and Building Material-related Business

### Main Products

<b>Glass for medical care</b>	Borosilicate glass tubing has excellent acid and chemical resistance and high strength, making it well suited as a material for ampules, vials, and other medical containers. LX Premium, with its exceptional radiation shielding properties, is used in medical facilities to protect medical personnel from radiation exposure.
<b>Heat-resistant glass</b>	Thanks to its exceptional thermal shock resistance and mechanical strength, this glass is used in heater and fireplace windows, the top plates of cooking appliances, and in other housing equipment.
<b>Glass for building materials</b>	NEG's glass for building materials comes in a variety of shapes with a variety of properties. They include fire-rated glass, glass-ceramic building materials, and glass blocks.

### Business Overview

In fiscal 2019, glass tubing for pharmaceutical and medical use saw an increase in shipments thanks to ongoing, growing demand worldwide, particularly in Asia, for products with superior chemical resistance and workability. Heat-resistant glass experienced a decline in demand during the first half of the year, causing shipments to fall below the previous fiscal year's level. Shipments of glass for building materials were roughly the same as the previous fiscal year.



Example of Lamion™ application (Tokyo Metro subway platform doors)



Example of FireLite™ fire-rated glass application (Shonan-Enoshima Station, Shonan Monorail)

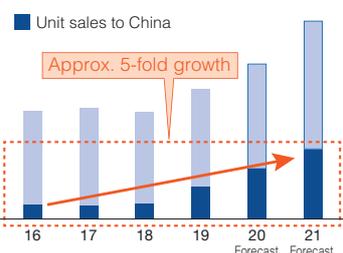
### Fiscal 2020 Outlook and EGP2021 Medium-term Business Plan

Fiscal 2020 is an important year for achieving the targets of the EGP2021 medium-term business plan. We are pursuing future-focused initiatives for all of our products. For glass tubing for pharmaceutical and medical use, we are increasing production capacity at our Malaysian base in order to reliably meet the ongoing, growing demand overseas. With regard to heat-resistant glass, we are bolstering our production and sales structures in order to shorten lead time, improve quality, and achieve other improvements that will allow us to expand sales of cooking appliance top plate glass in the European market. For glass for building materials, we will expand sales by promoting the properties of our fire-rated glass, as well as actively developing business in overseas markets.



Glass tubing for pharmaceutical and medical use

Unit Sales of Glass Tubing for Pharmaceutical and Medical Use



Akira Kishimoto

Senior Vice President and Group General Manager of Consumer Glass Products Group

## We will strengthen management supervisory functions and invigorate Board of Directors meetings, which will help our group boost competitiveness and achieve the goals of EGP2021, our medium-term business plan.

### Our Corporate Governance Policy

We believe that to increase corporate value and achieve sustainable growth, it is essential to continue to ensure managerial transparency and strengthen supervisory functions regarding the execution of business affairs. This is our basic policy on corporate governance and we will strive to improve our organization and business systems in accordance with this policy.

### Corporate Governance Structure

#### ▶ Board of Directors

The Board of Directors makes decisions on important management affairs of our group and supervises the execution of business affairs.

As of March 27, 2020, the Board of Directors consists of nine members (including two representative directors, four inside directors, and three outside directors). The Board of Directors is presided over by the Chairman of the Board.

To achieve clarity of management responsibility and develop a flexible management system capable of responding to changes in the business environment, the term of Directors is set at one year. Regular Board of Directors meetings are held monthly, and extraordinary Board of Directors meetings are held when necessary. In addition, at the budget meeting held once a year, the Board of Directors monitors management by

hearing explanations directly from the respective executive officers about the business outcomes of the current fiscal year and the budget of the next fiscal year.

We have disclosed the reasons for the appointment of each director in the Notice of the 101st General Meeting of Shareholders (held on March 27, 2020), which is available on our website.

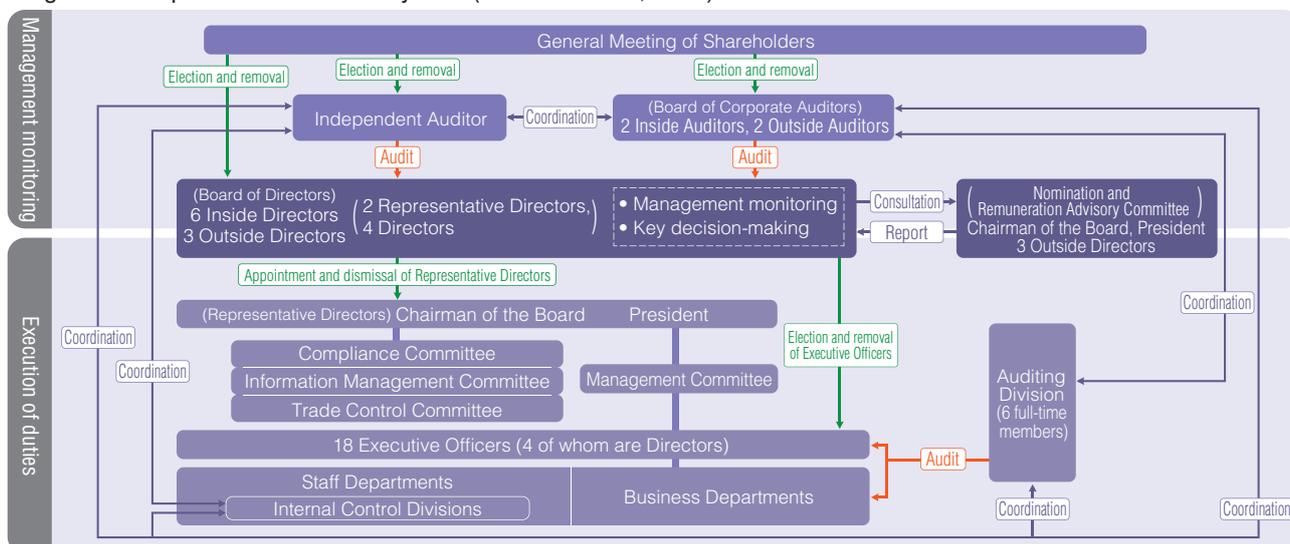
([https://www.neg.co.jp/uploads/sites/2/202003\\_101\\_en.pdf](https://www.neg.co.jp/uploads/sites/2/202003_101_en.pdf))

#### ▶ Board of Corporate Auditors

We adopt a corporate auditor system. As of March 27, 2020, the Board of Corporate Auditors consists of four Corporate Auditors, two of whom are outside Corporate Auditors.

Corporate Auditors conduct audits of the Directors' execution of their duties through assessing business affairs and corporate assets and setting important audit issues according to auditing policies, plans, and assignment of duties established by the Board of Corporate Auditors. They also participate in Board of Directors meetings. Meetings of the Board of Corporate Auditors are held monthly in principle, and Corporate Auditors share information and exchange opinions at these meetings. Corporate Auditors endeavor to improve the effectiveness of their audits by deepening their understanding about the company's business operations. For this purpose, the Corporate Auditors take various measures, such as attending the annual budget meeting and periodically

Diagram of Corporate Governance System (as of March 27, 2020)



questioning Directors and Executive Officers about their duties and handling of business affairs.

### ► Nomination and Remuneration Advisory Committee

Another way in which we are making our corporate governance more robust is via the Nomination and Remuneration Advisory Committee, which was established by a resolution at the Board of Directors meeting on March 27, 2020 to ensure transparency and objectivity when appointing or dismissing representative directors and when determining the remuneration of directors. This committee reviews matters related to the appointment and dismissal of representative directors and to the policies and systems governing how, and how much, directors are remunerated, and it reports its conclusions to the Board of Directors. The committee is comprised of the two representative directors and three outside directors listed below.

Chair	Shuichi Mori (outside director)
Members	Masayuki Arioka (chairman of the board) Motoharu Matsumoto (president) Reiko Urade (outside director) Hiroyuki Ito (outside director)

### ► Management Committee

The Management Committee deliberates on our company's important managerial affairs and draws up detailed action plans regarding the decisions made at the Board of Directors meetings. Management Committee meetings are held twice a month and when deemed necessary. As of March 27, 2020, the Management Committee is comprised of six inside directors (two of whom are representative directors) and four senior vice presidents.

### ► Executive Officers

We adopt an executive officer system to promote faster decision making, ensure managerial transparency, and enhance the execution of business affairs. As of March 27, 2020, there are eighteen Executive Officers (four of whom are Directors). The President is responsible for execution of duties and the other Executive Officers execute the duties assigned to them by the President. Each Executive Officer serves for a term of one year.

### Attendance of Board of Directors and Board of Corporate Auditors Meetings in Fiscal 2019

	Name	Board of Directors	Board of Corporate Auditors
Representative Directors	Masayuki Arioka	15/15 meetings (100%)	—
	Motoharu Matsumoto	15/15 meetings (100%)	—
Directors	Hirokazu Takeuchi	15/15 meetings (100%)	—
	Akihisa Saeki	15/15 meetings (100%)	—
	Koichi Tsuda	15/15 meetings (100%)	—
	Hiroki Yamazaki	15/15 meetings (100%)	—
Outside Directors	Shuichi Mori	15/15 meetings (100%)	—
	Reiko Urade	12/12 meetings (100%) (Since assuming office in March 2019)	—
	Hiroyuki Ito	Assumed office March 2020	—
Full-time Corporate Auditors	Masahiko Ohji	15/15 meetings (100%)	13/13 meetings (100%)
	Yoshihisa Hayashi	12/12 meetings (100%) (Since assuming office in March 2019)	10/10 meetings (100%) (Since assuming office in March 2019)
Outside Corporate Auditors	Katsuhiro Matsui	15/15 meetings (100%)	13/13 meetings (100%)
	Tsukasa Takahashi	12/12 meetings (100%) (Since assuming office in March 2019)	10/10 meetings (100%) (Since assuming office in March 2019)

### Outside Directors and Corporate Auditors

As of March 27, 2020, there are three outside Directors and two outside Corporate Auditors within our company. Outside Directors make up one-third of all Directors.

In order to strengthen the management supervisory capabilities of the Board of Directors and other corporate administrative bodies by ensuring that they receive informed and objective advice, our outside director appointments include a corporate management expert with many years of first-hand knowledge and experience in the world of corporate management; a science expert who is specialized and highly experienced in the field of agricultural sciences; and an economist with expertise and a robust background in corporate governance and organizational management.

Outside Corporate Auditors consist of one certified accountant and tax accountant and one attorney at law, who are both independent from the company and are highly experienced in their respective fields. They proactively perform their auditing duties and reinforce supervisory functions.

When hiring outside Directors and Corporate Auditors, we base our selection on whether candidates satisfy requirements set for independent directors/corporate auditors in accordance with the Tokyo Stock Exchange's rules and regulations. At the same time, we also take into account the importance of avoiding any risks or conflicts of interest with our general shareholders.

We have registered all our outside executives as independent directors/corporate auditors with the Tokyo Stock Exchange.

## Analysis and Evaluation of the Effectiveness of the Board of Directors

All of our Directors respond to an annual questionnaire to investigate the effectiveness of the Board of Directors. The questionnaire sent out in fiscal 2019 focused on (1) the Board of Directors in general, (2) the running of Board of Directors meetings, and (3) outside directors. On the topic of receiving advance explanation of materials for Board of Directors meetings and opportunities to talk with directors and executive officers in conjunction with corporate auditors, the results of the questionnaire suggest that, although these are extremely helpful in enabling outside directors to ascertain the condition of the company, the way they are carried out could be improved, such as by providing materials for Board of Directors meetings earlier. We found that the Board of Directors is viable and functioning effectively. We will continue to conduct such surveys to rate the Board's effectiveness and ensure that deliberations are effectively conducted at Board of Directors meetings.

## Training for Directors and Auditors

During Compliance Awareness Month, which is held in October of every year, we invite outside instructors to come and give lectures on compliance to our executive directors, full-time corporate auditors, and other executives. We also hold director training seminars twice a year, which provide our directors with a deeper understanding of current business conditions, including those surrounding corporate governance. Our corporate auditors participate in seminars and information exchanges with outside organizations, through which they deepen their auditing-related expertise. For our outside directors and outside corporate auditors, prior to assuming office, we provide them with explanations about NEG's current corporate situation and systems. After they have assumed office, we provide them with opportunities to tour our production facilities and subsidiaries, both in Japan and overseas, and to conduct interviews with directors and executive officers.

## Policy on Deciding Directors' and Corporate Auditors' Remuneration

Remuneration for inside directors is comprised of a monthly stipend, bonuses calculated based on company performance, and grants of restricted stock in order to incentivize directors' focus on medium-to-long-term corporate performance. Outside

directors and corporate auditors receive only a monthly stipend.

With regard to the monthly stipends and grants of restricted stock for directors, it is at the General Meeting of Shareholders that the maximum amount for monthly or annual remuneration, as well as the total amount for bonuses, is decided. With regard to remuneration for corporate auditors, the amount is decided upon through discussion with the corporate auditors, based upon standard remuneration for auditors at other companies, as determined by outside industry research, and within the total remuneration approved at the General Meeting of Shareholders.

In addition, on March 27, 2020 we established a Nomination and Remuneration Advisory Committee, which will help ensure transparency and objectivity when determining the remuneration of directors. More than half of the members of this committee are outside directors, and it renders decisions based on a majority vote by the members in attendance. The committee reviews director remuneration policies, systems, and amounts and reports its recommendations to the Board of Directors which, in turn, gives these recommendations suitable consideration when rendering their decisions.

## Total Amount of Directors' and Corporate Auditors' Remuneration in Fiscal 2019

Category	Total amount of remuneration (millions of yen)	Total amount for each type of remuneration (millions of yen)			Number of eligible Board Members
		Base remuneration	Restricted stock-based remuneration	Bonuses	
Directors (outside Directors excluded)	269	237	32	–	7
Corporate Auditors (outside Corporate Auditors excluded)	39	39	–	–	3
Outside Directors and Corporate Auditors	29	29	–	–	6

## Internal Control

Our internal control system is based on Japan's Companies Act and utilizes basic policies decided upon by the Board of Directors in order to build a system that ensures proper business operations. In addition, we have in place an internal control reporting system, which is based on the Financial Instruments and Exchange Act and which facilitates the development and operation of a system for ensuring proper financial reporting. The condition of financial reporting-related internal controls is assessed by the internal control division (Auditing Division), which is under the direct control of the president.

In the Internal Control Report released in March 2020, NEG's financial reporting-related internal controls for fiscal 2019 were assessed as "effective." A report by an outside auditing company also assessed the controls as being appropriate in all key aspects.

## A Conversation with the Outside Directors

**We sat down with NEG's three outside directors to talk about corporate governance, future growth, and other challenges.**



Outside director  
Shuichi Mori

Former outside director (retired March 27, 2020)  
Sumimaru Odano

Outside director  
Reiko Urade

Note: This conversation was conducted on February 20, 2020.

### What perspectives or approaches have you brought to your managerial role since being appointed as outside director?

**Odano:** My specialization is in international economics, and I was the director of Shiga University's Center for Risk Research where I studied questions of how to ascertain and respond to risk, as well as how to be prepared for it. When risk factors appear, it is important that you consider how to go about ascertaining, measuring, verifying, and handling risk within the context of your capacity for information-gathering. Such an outlook is essential for organizations faced with particularly significant change. I certainly see that NEG is a company that takes its business seriously. However, in order to become the world's leading manufacturer of special glass, it is important to not just take business seriously but to also cultivate a capacity for information-gathering and analysis geared towards risk management.

**Mori:** I have always asked myself how an outside director should be. My conclusion, using M&A as an example, is that—because we are outsiders—we do not contribute to the

development of the acquisition strategy itself but, rather, objectively check whether or not policy decision-making processes and procedures are being implemented properly. And in order to keep the board of directors from becoming a “group of friends,” an outside director must maintain an independent perspective when checking. Outside directors must be able to tell the chairman and the president the unpleasant truths that those within the company cannot. I believe that these are the major roles of an outside director.

**Urade:** It has been less than a year since my appointment; however, in that time I have toured three of NEG's business facilities in Japan and its plant in Malaysia. Although the environment at production sites is always harsh, I was impressed with how much emphasis NEG places on creating a safe, worker-friendly environment. At the same time I got a sense of the strength that undergirds NEG as a manufacturing company that supports society. Given my professional background, I focus heavily on how NEG is functioning in terms of research and development. My other focus is diversity. It is employees that make a company run. How employees work is important, and when their motivation, stress, and ambitions for the future are positive, the company also benefits.

Given the sociological research findings that show promoting diversity is beneficial for corporate performance and improvement, it is essential that companies be proactive about incorporating and capitalizing on diverse human resources.



### What is your impression of NEG with regard to its provision of operations-related information?

**Mori:** I feel that NEG is extremely transparent with its explanations. Prior to each meeting of the board of directors, I am provided with materials relating to the topics for discussion and with a one to two hour explanation. Thus, I am able to prepare questions, which are pertinent to the meeting topics. In addition to this, I receive both the minutes from and explanations of Management Committee meetings and other important meetings, and I have opportunities to hear explanations from the heads of the departments. Leaving aside M&A and other proactive matters, I find NEG to be quite open with its business operations-related information.

**Urade:** When M&A come up as the topic for discussion I receive an explanation shortly beforehand, but I find that I do not receive much explanation prior to that. I think it would be good to provide a bit more information at the preliminary stage of deliberation as well.

**Odano:** There is a phenomenon known as information asymmetry. This occurs when the people running a company know the most about the company while the shareholders know comparatively less. One of the roles of outside directors is to bridge the gap between these two.

### What do you think about how the effectiveness of the board of directors is evaluated and about the governance structure in general?

**Odano:** The evaluation questionnaire asks us to choose between "Good" and "Poor" without any intermediate options.

Of course there is a free response section, but it would also be a good idea to enable respondents to explain their reasons in more detail on each question. Take, for example, a question about whether or not the current nine-member size of the board of directors is appropriate. The answer to this will vary depending upon various factors, such as the size of the company and the societal demands put upon the company. If the question can be structured such that this sort of reasoning can accompany the "Good" and "Poor," then I feel this would enable clearer answers to the question of effectiveness to be provided.

**Urade:** I agree with Mr. Odano. Important points can sometimes be found within the questions that are not asked.

**Mori:** I feel that, in the end, the effectiveness of corporate governance depends upon the ethical framework of those running the company. From an institutional standpoint, when management is running amok, who is there, ultimately, to stop them? One method for combating this is to publicly institute term limits. Given the business it handles and its size, NEG is extremely efficient in terms of the number of directors it has. However, if I had to suggest one thing, it would be to increase the number of directors by one in order to split the role of the CFO. I feel that it is appropriate within the manufacturing sector of a technologically oriented country like Japan for more than half of NEG's directors to also be executive officers.

### The targets of EGP2021 have been revised. Moving forward, what challenges does NEG need to overcome in order to enter the next stage of growth?

**Odano:** NEG is not mistaken in viewing China as a strategic market. So the question then becomes what sort of marketing strategy it should pursue.

**Mori:** I feel that the largest challenge for future growth is figuring out how to develop a third business pillar after display





glass and glass fiber. NEG also needs to further grow its capacity for developing applications and for marketing that capitalize on its biggest technological strength. I would like to see NEG overcome its weakness by publicizing its technology more and actively pursuing technical cooperation with different industries.

**Urade:** The manufacturing industry cannot escape the fact that its sales are fundamentally affected by economic and market trends. So what should a manufacturing company do when the wind is against it? I think it is important for such companies to ensure their corporate vitality by concentrating on quality, price, production efficiency, and sales strength in order to boost their market presence.

**Mori:** In terms of human resources, how engaged do employees feel on an individual level with their jobs?

Employees can be divided into “farmers” and “hunters.”

The farmers are the honor students, while the hunters are the bad boy types. It is the hunters who come up with the breakthroughs. If a company does not have the patience and tolerance for these employees, no new work will be produced. Thus, it is important to focus on human resource development and on keeping an environment where employees feel free to speak their mind.

**Urade:** Human resource development is absolutely essential to research and development as well. It is important to give ongoing responsibilities and discretionary authority to employees. Without these two elements, it is difficult to cultivate creativity. Also, given the nature of the industry, it has been difficult to hire women in past eras, and, in terms of diversity, it still feels like there is much work to be done. Attempts to cultivate more female employees are complicated by the limited total number of female employees available. I feel that it is essential to cultivate a large number female employees as soon as possible who can serve as role models for other female employees.

**Odano:** There are some difficult aspects of EGP2021, but when I think of the countless times in the past when NEG has faced and overcome crises, I feel confident that it will find some sort of opening through which to make inroads into the AI and 5G era. Looking from the long-term perspective of 10 to 15 years from now, I foresee further expansion and development. And I expect that NEG will continue to grow into the future.



# Directors, Corporate Auditors, Executive Officers

(As of March 27, 2020)

## Directors



Chairman of the Board  
(Representative Director)

**Masayuki Arioka**

Apr. 1978 Joined Nippon Electric Glass  
Mar. 1997 Appointed as General Manager of Glass Fiber Division, Production  
Jun. 1999 Appointed as Director (incumbent)  
Jun. 2002 Appointed as Vice President  
Jun. 2004 Appointed as Senior Vice President  
Apr. 2008 Appointed as Executive Vice President  
Jun. 2009 Appointed as President  
Mar. 2015 Appointed as Chairman of the Board (incumbent)



President  
(Representative Director)

**Motoharu Matsumoto**

[Auditing]

Apr. 1982 Joined Nippon Electric Glass  
Jun. 2003 Appointed as CEO of Technoglass Inc.  
Feb. 2005 Appointed as General Manager of Accounting Division  
Apr. 2007 Appointed as Vice President  
Jun. 2011 Appointed as Director (incumbent) and Senior Vice President  
Apr. 2013 Appointed as Executive Vice President  
Mar. 2015 Appointed as President (incumbent)



Director and Executive Vice President

**Hirokazu Takeuchi**

(Research & Development, Process Development & Engineering, Electronic Products Business)

Apr. 1982 Joined Nippon Electric Glass  
Apr. 2010 Appointed as Vice President and Group General Manager of Electronic Products Group  
Jun. 2013 Appointed as Director (incumbent) and Senior Vice President  
Jan. 2017 Appointed as Executive Vice President (incumbent)  
Jan. 2019 Appointed as Group General Manager of Research & Development Group (incumbent)



Director and Senior Vice President

**Akihisa Saeki**

(Display Glass Business, Thin Film Business)

Apr. 1982 Joined Nippon Electric Glass  
Apr. 2012 Appointed as Vice President and General Manager of LCD Glass Division, Production  
Oct. 2013 Appointed as General Manager of Display Glass Division, Production  
Jun. 2014 Appointed as Director (incumbent) and Senior Vice President (incumbent)  
Mar. 2015 Appointed as Group General Manager of Display Glass Group (incumbent)



Director and Senior Vice President

**Koichi Tsuda**

(Administration, Human Resources, Accounting, Purchasing, Sales Management) [Corporate Strategy, Information Systems, Tokyo Branch Office, Security Trade Control]

Apr. 1982 Joined Nippon Electric Glass  
Apr. 2011 Appointed as Vice President and General Manager of Administrative Division  
Mar. 2015 Appointed as Director (incumbent) and Senior Vice President (incumbent)



Director and Senior Vice President

**Hiroki Yamazaki**

[Fundamental Technology, Intellectual Property, Environmental Management, Quality Auditing, Product Safety Management, Cooperation in Research & Technology]

Apr. 1984 Joined Nippon Electric Glass  
Oct. 2006 Appointed as General Manager of Technical Division  
Apr. 2011 Appointed as Vice President  
Jan. 2016 Appointed as Group General Manager of Corporate Technology Group  
Mar. 2016 Appointed as Director (incumbent) and Senior Vice President (incumbent)



Outside Director  
(Independent Director)

**Shuichi Mori**

Apr. 1972 Joined Sumitomo Corporation  
Jun. 2008 Appointed as Executive Vice President (Representative Director) of Sumitomo Left Sumitomo  
Mar. 2011 Appointed as President (Representative Director) of Jupiter Telecommunications Co., Ltd.  
Jan. 2014 Appointed as Chairman (Representative Director) of Jupiter Telecommunications Left Jupiter Telecommunications  
Jun. 2015 Appointed as outside Director of Nippon Electric Glass (incumbent)  
Mar. 2016 Appointed as outside Director of Nippon Electric Glass (incumbent)  
Jun. 2017 Appointed as outside Director of Tokai Cable Network (incumbent)



Outside Director  
(Independent Director)

**Reiko Urade**

Apr. 2010 Became Professor, Graduate School of Agriculture, Kyoto University  
Apr. 2018 Became Emeritus Professor, Kyoto University (incumbent) and Research Professor, Institute for Integrated Radiation and Nuclear Science, Kyoto University (incumbent)  
Mar. 2019 Appointed as outside Director of Nippon Electric Glass (incumbent)



Outside Director  
(Independent Director)

**Hiroyuki Ito**

Apr. 1992 Became research associate, Faculty of Economics, Shiga University  
Apr. 2009 Became Professor, Faculty of Economics, Shiga University (incumbent)  
Mar. 2020 Appointed as outside Director of Nippon Electric Glass (incumbent)

Note: ( ) means "supervising" and [ ] means "in charge" indicating work assignments of executive officers.

## Corporate Auditors



Full-time  
**Masahiko  
Ohji**

Apr. 1982 Joined Nippon Electric Glass  
Oct. 2010 Appointed as General Manager of  
Development Division  
Jan. 2015 Appointed as Special Assistant to  
President  
Mar. 2015 Appointed as full-time Corporate  
Auditor (incumbent)



Full-time  
**Yoshihisa  
Hayashi**

Apr. 1986 Joined Nippon Electric Glass  
Mar. 2015 Appointed as General Manager of  
Administrative Division  
Mar. 2019 Appointed as full-time Corporate  
Auditor (incumbent)



Outside (Independent  
Corporate Auditor)  
**Katsuhiko  
Matsui**

Oct. 1990 Joined Showa Ota Audit Corporation (now  
Ernst & Young ShinNihon LLC)  
Aug. 1994 Registered as certified public accountant  
Oct. 2010 Left Ernst & Young ShinNihon  
Nov. 2010 Registered as certified tax accountant,  
established Matsui-jicpa (incumbent)  
May 2011 Became Representative Partner of Sakura  
Horwath LLC (incumbent)  
Mar. 2018 Appointed as outside Corporate Auditor  
of Nippon Electric Glass (incumbent)



Outside (Independent  
Corporate Auditor)  
**Tsukasa  
Takahashi**

Apr. 1989 Registered as attorney at law and joined  
Katsube Law Office (now Katsube  
Takahashi Law Office)  
Jul. 2012 Became Representative of Katsube  
Takahashi Law Office (incumbent)  
May 2013 Appointed as outside Corporate Auditor  
of Aeon Delight Co., Ltd. (incumbent)  
Mar. 2019 Appointed as outside Corporate Auditor  
of Nippon Electric Glass (incumbent)

## Executive Officers

## Senior Vice Presidents

**Akira Kishimoto**

[Consumer Glass Products Business]

**Norio Nakamura**

[Glass Fiber Business]

**Haruki Matsumiya**

[Process Development & Engineering]

**Tomonori Kano**

[Display Glass Business,  
Thin Film Business]

## Vice Presidents

**Hiroaki Nomura**

[Glass Fiber Business (Sales);  
Electric Glass Fiber America, LLC]

**Masaya Kubo**

[Nippon Electric Glass (Malaysia) Sdn. Bhd.]

**Masaaki Kadomi**

[Research & Development]

**Mamoru Morii**

[Accounting, Purchasing]

**Masashi Takahata**

[Consumer Glass Products Business  
(Sales), Sales Management]

**Takuo Horiuchi**

[Display Glass Business (Sales)]

**Masahiro Kobayashi**

[Electronic Products Business]

**Hitoshi Kanaya**

[Process Development & Engineering]

**Toshiyuki Nakajima**

[Administration, Human Resources]

**Hidetaka Oda**

[Display Glass Business (Production)]

**To maintain public trust and to achieve sustainable growth, every employee and executive of our group is expected to comply with laws and international rules, and consistently act in accordance with our organization's high ethical standards.**

## Compliance System

We have a compliance committee, a specialized organization that makes sure all of our group employees are informed to ensure their compliance with laws and corporate ethical standards. The committee is responsible for the following activities:

- Drafting revisions to the Group Code of Conduct and Principle of Activities
- Collecting and analyzing information on compliance and providing compliance training
- Managing an internal whistleblowing system (NEG Hotline)

## Compliance Program

### ▶ Group Code of Conduct and Principle of Activities

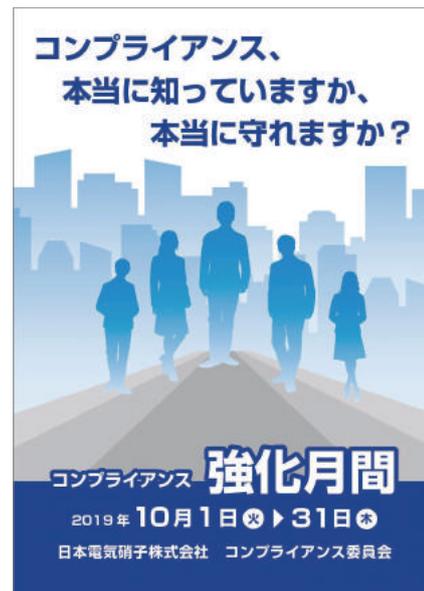
To ensure that all employees are informed on compliance matters, we have established the Group Code of Conduct and Principle of Activities. Wallet-sized cards printed with the Corporate Philosophy Structure, Code of Conduct, Principle of Activities, and an introduction to the NEG Hotline are distributed to employees of group companies in Japan.

NEGグループ企業行動憲章 ～誠実な行動～	
<b>1. お得意第一</b> ○お得意先のご要望を理解し、そのご要望にどこまでもお応えします。 ○社会に役立ち、かつ安全でお得意先の満足と信頼を得られる製品を提供します。 ○新たな技術開発に挑戦し、文明の進歩と豊かな未来に寄与します。	<b>5. 自然との共生</b> ○自然と共存することを常に意識し、企業活動に伴う環境負荷の低減に努めます。 ○地球環境の保全と循環型社会の実現に寄与します。
<b>2. 達成への執念</b> ○執念をもって課題を成し遂げます。	<b>6. 社会貢献</b> ○健全な企業活動を通して利益を生み出し、社会の持続的発展に貢献します。 ○企業活動を行う国や地域社会の文化を尊重し、良き企業市民として行動します。
<b>3. 自由闊達</b> ○前例にとらわれない自由な発想と、部門や世代にとらわれない自由な発言を尊重します。	<b>7. 人権尊重</b> ○人権を尊重し、差別的取り扱い、児童労働、強制労働を認めません。 ○安全で、従業員一人ひとりが十分に能力を発揮できる環境を確保します。
<b>4. 高い倫理観</b> ○内外の法令、国際ルールを遵守し、常に高い倫理観をもって誠実に行動します。 ○政治、行政との健全かつ正常な関係を保ち、反社会的勢力、団体には毅然と対応します。 ○公正、透明、自由な競争、適正な取引を行います。 ○会社資産を適正、確実に管理します。	<b>8. 情報発信</b> ○適時、適切に、必要な企業情報を開示するとともに、広く関係先とのコミュニケーションを図ります。
以上	
1998年 8月1日制定 2006年 2月1日改訂 2015年12月1日改訂	

### ▶ Internal Whistleblowing System

An internal whistleblowing system called NEG Hotline has been installed. Its purpose is to prevent any illegal violations, wrongdoings, or unethical acts and to promote early detection and quick resolution should such acts occur. We have established two consultation hotlines, one that connects employees to the compliance committee (internal contact point) and another that connects to an attorney's office (outside contact point). The confidentiality of the informants is strictly protected at both contact points, so that no unfair treatment will occur.

This whistleblowing system has also been set up at most of our overseas subsidiaries and we are currently working to have it at all NEG group companies in the future.



Poster for Compliance Awareness Month

### ▶ Ensuring Compliance

To raise compliance awareness (for example, for high ethical standards and respect for human rights) throughout our group, each year we carry out compliance training as a part of an education program for newly hired employees and antitrust seminars for employees engaged in sales activities. We also ensure awareness among management by holding workshops for directors and executive officers. At these sessions, participants take the opportunity to discuss themes such as governance and compliance.

In addition, we have designated October as the month for strengthening compliance. We conduct compliance-related lectures and workshops throughout our group companies both in Japan and overseas, and also put up compliance awareness posters throughout our facilities. Moreover, we ask all executives and employees in Japan and overseas to provide us with signed declarations each year promising that they will abide by the Principle of Activities. This gives them the opportunity to reflect on how they carry out their work in terms of compliance.

Thanks to these efforts, no affairs subject to legal actions, such as bribery, anticompetitive acts, or other violations occurred in fiscal 2019.



Compliance lecture at the Otsu Plant



Antitrust seminar in Osaka

#### Compliance Education, Workshops, and Lectures Held in Fiscal 2019

	Name	Intended Persons	No. of Times	No. of Participants	Themes
Japan	Education for new employees	All new employees	2	42	<ul style="list-style-type: none"> <li>● Corporate Philosophy, Group Code of Conduct, Principle of Activities</li> <li>● What is compliance?</li> <li>● Antitrust laws</li> <li>● Internal whistleblowing system</li> <li>● Case studies, etc.</li> </ul>
	Workshop	Managers at our company and domestic subsidiaries (Participants shall inform other employees in their workplace of the content.)	4	119	<ul style="list-style-type: none"> <li>● Necessity of compliance</li> <li>● Compliance violations and countermeasures</li> <li>● Internal whistleblowing system, etc.</li> </ul>
	Lecture	Executives and general managers at our company, representatives of domestic subsidiaries, district managers	1	61	<ul style="list-style-type: none"> <li>● Innovation-focused antitrust legal compliance</li> </ul>
	Antitrust seminar for sales departments	Employees of our company engaged in sales activities	1	34	<ul style="list-style-type: none"> <li>● Antitrust laws</li> <li>● Current status and cases in each country</li> <li>● Case studies</li> </ul>
Overseas	Workshop	Managers at subsidiaries in the U.S., Europe, and Malaysia	10	325	<ul style="list-style-type: none"> <li>● Corporate Philosophy, Group Code of Conduct, Principle of Activities</li> <li>● Falsification of quality</li> <li>● Antitrust laws</li> <li>● Bribery, etc.</li> </ul>

## Import/Export Control Initiatives

NEG has established a Trade Control Committee as part of efforts to ensure thorough implementation of export controls and compliance with various export-related legal requirements, such as the Foreign Exchange and Foreign Trade Act. Among other things, the Trade Control Committee scrutinizes the implementation of export control procedures, facilitates Foreign Exchange and Foreign Trade Act-related training, and develops internal rules and regulations.

Also, in order to ensure appropriate compliance with import/export customs procedures and tax reporting, NEG has established the Specified Export Declaration Office and Special Import Declaration Office to facilitate the implementation of trade-related business according to the requirements of the Customs Act and other tariff-related laws. As part of their efforts to ensure thorough compliance and greater awareness, both of these offices conduct regular Group-wide auditing and employee training.

These and other initiatives have earned NEG certification as an Authorized Economic Operator (AEO) by Kobe Customs for both exports and imports. This is a status conferred on those economic operators that have well-developed cargo security controls and legal compliance structures in place.

Thanks to this, not only NEG but also its overseas subsidiaries are conferred AEO mutual recognition, thereby expediting smoother import/export customs procedures. In addition, NEG is the only Japanese glass manufacturer to be certified as an AEO for both imports and exports. (Current as of February 19, 2020.)

## Implementing BCP

To be prepared for disasters such as earthquakes, typhoons, floods, fires, and mass infections, we created a disaster management manual based on the company's disaster preparedness regulations, and we carry out emergency drills periodically. In the wake of the 2011 Great East Japan Earthquake, we reviewed our disaster management measures and implemented seismic reinforcement to our buildings, production facilities, and equipment.

In 2015, we began using Business Continuity Planning (BCP), which replaced the previous disaster preparedness regulations. To facilitate the processes necessary for BCP, a manual providing information on detailed preparation procedures and actions that should be taken when an emergency or disaster strikes was created. In accordance with the implementation of BCP, we have also introduced a system that will efficiently confirm the whereabouts of all domestic

employees and their families in case of an emergency. Moreover, in order to resume production and continue to supply our customers in the aftermath of a disaster, we are working to strengthen our risk management system of procurement.

At the BCP response training held in November 2019, we utilized an anticipated disaster scenario involving serious damage that hampers a quick recovery and, based on this, carried out simulated strategic business continuation-related decision-making, from which various obstacles to recovery were identified.

### Basic Policy of BCP

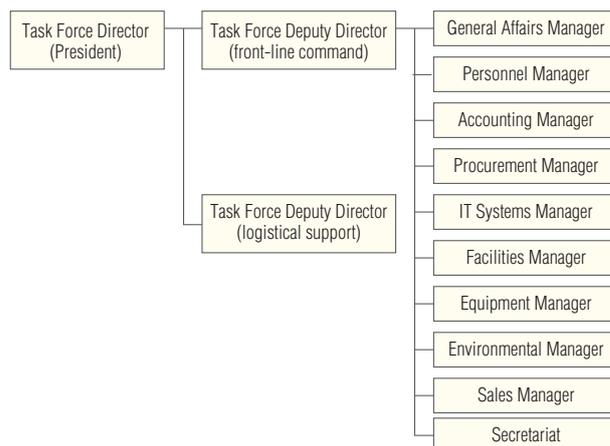
- ① To protect each employee and their families and to secure their safety.
- ② To protect production equipment, to prevent the spread of damage as well as secondary disasters from occurring within the company and the adjacent communities, and to help with rescue efforts.
- ③ To resume providing customers with products and services as rapidly as possible.

### BCP Activation Structure



(Roles) Head Office: Implement basic policy and decision-making for general disaster response  
Branches : Facilitate disaster response while coordinating closely with the Head Office

### Structure of Head Office Disaster Response Task Force



BCP response training

## Risk Management

Our group reviews business risks on a periodic basis, based on our policy on internal control, and takes the necessary steps to manage such risks. In cases involving any business risks that are deemed significant, responsible divisions or specialized committees formulate regulations and guidelines, conduct training, prepare manuals, and undertake additional activities as deemed necessary.

### Business Risks

Risk	Description	Response
① Drastic changes in demand and market structure	Contracted demand for existing products due to technological innovation, or fluctuation of price or supply of products due to intensified competition.	Speed up R&D, respond to new needs through aggressive sales.
② Capital expenditure risks	Significant change in demand forecast, shortage of plant capacity, sudden change in price of major equipment or materials.	When and however necessary, build new production facilities and continuously upgrade them.
③ Risks related to certain products	Change in investment or sales plan or material procurement policy of our major customers.	Diversify our customer base.
④ Risks related to procurement of materials and other items	Tight supply or delay of special raw materials or materials whose suppliers are limited, or escalating price of such materials.	Maintain good relations with suppliers, find new suppliers, increase the number of suppliers, and switch to general-purpose materials.
⑤ Risks related to legal restrictions	Violation of the laws or regulations of the country or region where we operate.	Comply with laws and regulations, survey changes in legal revisions, and hold periodic in-house education and audits.
⑥ Risks related to intellectual property rights	A litigation related to intellectual property rights.	Obtain intellectual property rights useful for business, survey and monitor other companies' intellectual property rights, develop alternative technologies, and take over or license intellectual property from other companies.
⑦ Environmental risks	A shift to stricter environmental regulations, or more corporate responsibilities related to the environment demanded by society.	Develop environmentally friendly products, ensure that facilities and management systems exert minimal impact on the environment, raise production efficiency, and practice the 3Rs (reduce, reuse, recycle).
⑧ Risks related to fluctuations in exchange and interest rates	Change in exchange or securities market, or interest rate environment.	Utilize forward exchange contracts, properly manage interest-bearing debt, and carry out interest rate swap transactions.
⑨ Risks related to overseas business operations	Unanticipated change in laws or regulations, international tax risk, particular trade practices, change in political or social conditions, social turmoil due to terrorism or war, or others.	Facilitate close communication between overseas subsidiaries and local authorities, and get advice from experts.
⑩ Securing human resources and related business risks	Difficulty in securing human resources appropriate for future business; various labor-related compliance violations.	Aggressively hire and train a diverse range of people; secure an optimal, effective workforce that matches our efforts to save labor through automation; ensure legal and regulatory compliance and provide relevant training.
⑪ Impairment accounting for fixed assets	Occurrence of impairment loss of fixed assets due to the impact of business profitability or market trends.	Conduct capital expenditure aimed at profitability and recouping investment; reorganize, sell, or transfer idle fixed assets.
⑫ Risks related to information management	A filed claim for damages due to the leak of confidential information, which our group obtained in the course of business; tarnished corporate reputation due to such problems; a decline in competitiveness due to a leak of information on newly developed technology; or cyber attacks on IT systems.	Establish an Information Management Committee, utilize security systems, hold in-house education, and comply with the EU's GDPR (General Data Protection Regulation).
⑬ Risks related to natural disasters and accidents	Delay of production or shipment caused by natural disasters (such as earthquakes or typhoons), accidents (such as fires), or manpower shortages resulting from the spread of infectious diseases; repair costs for associated damage to facilities.	Implement a BCP, seismically reinforce buildings, implement disaster preparedness measures, takes measures to prevent virus infections, and disperse duties among manufacturing sites.

# CSR Foundation

## We will contribute to realizing a sustainable society by working on three priority themes: the Environment, Diversity and Inclusion, and Community Contribution.

### The History and Themes of Our CSR Activities

Our work on pollution problems at our Fujisawa Plant in the early 1970s taught us to undertake environmental conservation as an issue crucial to the sustainability of our operations. A particular characteristic of special glass manufacturers is the consumption of large amounts of energy and resources, and the emission of carbon dioxide. Accordingly, environmental conservation continues to be an issue of the utmost importance for our group. At the same time, we have engaged in contribution to the community mainly by assisting with the education of local human resources and through active involvement in employment of the disabled.

Based on this historical background, and in order to further advance our CSR activities, the Management Committee in which our top management participates has established a “way of thinking” that forms the foundation of these activities, which we have set forth in our CSR priority themes.

### Our Fundamental Way of Thinking Regarding CSR

CSR is a key area in our corporate activities and cannot exist separate from our corporate philosophy structure. Accordingly, we carry out our CSR activities in accordance with the intention of our corporate philosophy structure and, through the implementation of CSR activities, we aim to raise our corporate value and realize a sustainable society. We have established both of these approaches as our fundamental way of thinking in regard to CSR.

#### Our Way of Thinking on CSR

We promote CSR with our corporate philosophy structure as the basic principles. Through our CSR activities we will raise our corporate value and realize a sustainable society.

### Three Priority Themes

We have established the Environment, Diversity and Inclusion, and Community Contribution as the three priority themes of our CSR. These themes have a strong association with the priority issues that we have focused on so far (environmental conservation, community contribution, employment of the disabled). We have reconfirmed the background and importance of these three themes and have clarified the future direction for scaling up our initiatives on a broader scale. In addition, we will place emphasis on these themes, as we believe they are directly linked to the United Nations' Sustainable Development Goals (SDGs).

#### Environment

Environmental conservation is a duty for a company like ours whose operations incur a high environmental burden, so we advocate “consideration for the environment” and “efficient manufacturing processes lead to environment-friendly manufacturing.” Furthermore, we maintain the attitude that it is unthinkable for our operational activities to not include environmental conservation activities.

#### Diversity and Inclusion

The basis of our thinking on Diversity and Inclusion is that the integrated strength of personnel with diverse backgrounds and values—whether in terms of gender, race, or so on—is the driving force behind corporate growth. Of course, employment of the disabled is also included in this theme. At the same time, we will do our utmost for all these employees by providing personnel training and maintaining a safe and healthy working environment for them.

#### Community Contribution

A good relationship with the community is essential for sustainable business. Therefore, we believe it is important to engage with local communities to gain their trust and appreciation. We will continue to actively participate in local activities, and also provide support for the disadvantaged and for human resource development in the communities we serve.

## The Basic Policy of Our Priority Themes

In order to further clarify the direction of our CSR activities, we have determined a basic policy for each of our priority themes. Furthermore, we have identified corporate governance as what supports the nucleus of CSR and are positioning and developing it within the framework of our CSR.



## Corporate Governance

We aim to enhance corporate governance that supports the nucleus of our CSR



We have put into writing our way of thinking on CSR and what our three priority themes are. We are actively pursuing CSR activities focused on departments central to each priority theme, i.e., the Environmental Management Division, Human Resources Division, Administrative Division, and Fundamental Technology Division. Through activities like these, we are contributing to the realization of a sustainable society and the improvement of our corporate value.

**With “Consideration for the environment” as one of our key values, we will continue to manufacture products in an environmentally friendly way.**

## Our Way of Thinking on Environmental Conservation

We hold consideration for the environment as an important value and have always been conscious of environmental conservation through our operations. Furthermore, we have managed our business based on the belief that practicing the world’s most efficient manufacturing process is, in fact, the key to realizing the world’s most environment-friendly manufacturing. Against this backdrop, we endeavor to not only reduce our environmental footprint but also tackle various issues, including sustainable development and conservation of biodiversity.

The Environmental Charter is our fundamental policy on the environment and sets forth the direction we need to follow in enacting our initiatives for environmental conservation. In accordance with our Environmental Charter, through our glass business, and together with our group companies, we will continue to be instrumental in preserving the global environment and realizing a recycling-oriented society.



Motoharu Matsumoto, President

## Environmental Charter

### Environmental Principles

Preservation of the global environment is extremely important and indispensable for the prosperity of civilization and humanity in the 21st century.

Nippon Electric Glass, upholding the Corporate Philosophy of “To build a brighter future for the world by uncovering the unlimited possibilities of glass for more advanced creative manufacturing” and adhering to “Consideration for the environment” as one of its essential corporate values, strives to be and remain the world’s leading manufacturer of special glass by ensuring the state-of-the-art technological development, the highest quality standards, efficient production, and steady product supply. Nippon Electric Glass and its group companies are committed to contributing to the preservation of the global environment and realization of a recycling-based society by adopting high-efficiency and environmentally responsible processes.

### Action Plan

1. We will honor and observe all environment-related laws and regulations and the environment-related agreements and conventions that we have signed, and establish and enforce our own and voluntary environmental restrictions.
2. We will endeavor to reduce our environmental impact in all aspects of our corporate activities and in all stages of the product life cycle, including procurement, manufacturing, transportation, sales, use, reuse, treatment, and disposal.
3. We will attain the world’s highest-level manufacturing to more effectively utilize natural resources and energy sources, thereby contributing to preservation of biodiversity and reduction of greenhouse gas emissions.
4. We will strive to adapt our activities to the requirements of 21st-century society to prevent pollution, thereby optimizing our presence in society.
5. We will set environmental objectives and targets and attain them through optimization of our essential operations and environmental protection activities in which all employees participate. We will also continuously improve our environmental management system to enhance our environmental protection performance.

This Charter is informed to all employees and affiliated companies, and is made available to parties outside the Company at their request.

## Promoting the Environmental Management Plan

In fiscal 2019, in order to improve environmental performance, all domestic plants set 36 objectives, of which 29 were attained. A total of 41 objectives have been set for fiscal 2020. The topics we are working on are directly connected to pressing issues and issues directly connected with our core business.

## ISO 14001 Certification Status

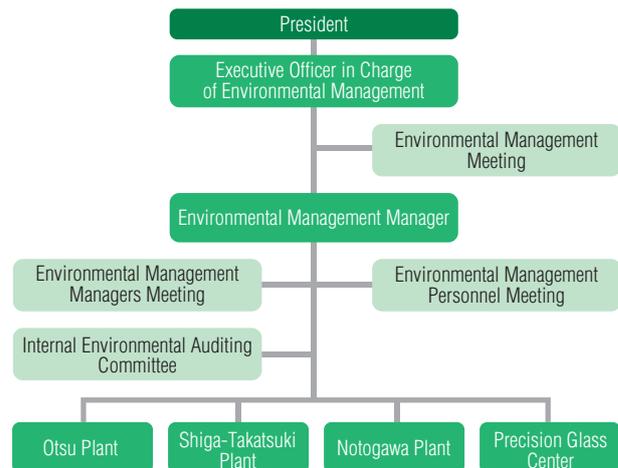
### ► Adapting to New ISO 14001:2015 Standards

The international environmental standard ISO 14001 was revised in 2015 in order to ensure the efficacy of ISO application. From January 2017 we implemented a new Environmental Management System (EMS), which incorporates the new standard and, after undergoing the auditing process, we received accreditation renewal in August 2017. In 2020 we are scheduled to undergo our first renewal audit under the new standard. We are working to put in place a better environmental management system by implementing a PDCA (Plan, Do, Check, Action) cycle.

### ISO 14001 Certification Status of Our Group

Company name	Date of certification
Nippon Electric Glass Co., Ltd. (multi-certification at four plants)	Aug. 27, 1999
Group companies	Date of certification
Japan	
SGS Engineering Co., Ltd.	Jan. 19, 2001
Nichiden Glass Processing Company, Limited	Nov. 1, 2002
Shiga Nichiman Company, Limited	Feb. 15, 2013
Overseas	
Techneglas LLC	Jan. 31, 2000
Nippon Electric Glass (Malaysia) Sdn. Bhd.	Jan. 12, 2002
Nippon Electric Glass Taiwan Co., Ltd.	Sep. 18, 2006
Paju Electric Glass Co., Ltd.	Aug. 28, 2007
Nippon Electric Glass (Korea) Co., Ltd.	Oct. 9, 2007
Electric Glass (Shanghai) Co., Ltd.	Dec. 21, 2009
Electric Glass (Korea) Co., Ltd.	Dec. 9, 2014
Electric Glass (Guangzhou) Co., Ltd.	Nov. 11, 2015
Electric Glass (Xiamen) Co., Ltd.	Apr. 17, 2017
Electric Glass Fiber NL, B.V.	May 22, 2017
Electric Glass (Nanjing) Co., Ltd.	Apr. 13, 2018

## Environmental Management Activity Organization Chart



## Environmental Management Meeting

The executive officer in charge of environmental management serves as chair, and the President and representatives of each operational department attend this meeting. Representatives from overseas subsidiaries also participate as necessary. Specific environmental conservation activities based on the President's environmental policies, performance reports, and promotion updates are shared. Deliberation on our group's environmental conservation activities is carried out at this meeting.

## Environmental Education

As environment-related laws are revised and regulations are strengthened, it is necessary to accurately ascertain those changes in order to ensure legal compliance. In fiscal 2019 we invited outside instructors to provide focused training to those employees who actually deal with environmental law-related issues in their day-to-day work.

### Environmental Management Logo

This logo was created in June 1993 and it is used when making internal postings about our EMS activities and Environmental Charter. The design was selected from among internal suggestions. The green leaves represent environmental technology, nature, and the hands of our employees, while the blue circle depicts the sky and the earth, environmental equipment made by our employees, and the community and society surrounding us.



## Environmental Business Plan

Our environmental business plan is an original activity that applies our operational management approach to environmental conservation activities. Waste, water, and exhaust gas are the main themes of the plan, under which we work to reduce the environmental footprint that results from our glass production operations.

### ► Waste Reduction

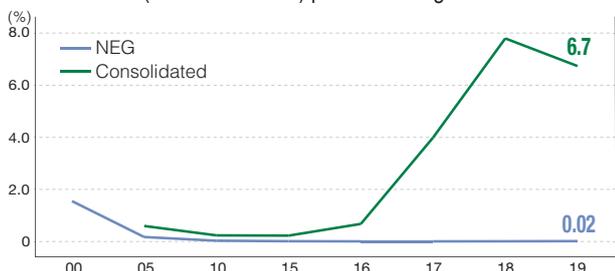
As part of our waste reduction efforts begun in 2000, we separate waste into two categories: “normal waste,” comprised of waste generated by our normal production activities, and “bulky construction waste,” comprised of waste generated by such activities as regular maintenance of glass melting furnaces. These waste categories are further separated into the four subcategories shown below, with “Landfill Waste D” being our highest waste reduction priority due to its high environmental impact.

#### Waste Categories



With regard to normal waste requiring landfill disposal (Landfill Waste D), our ongoing efforts since 2009 to minimize and recycle what we generate on a daily basis have reduced the percentage of this waste per total weight of products sold to 0.1% or less. On the other hand, however, as a result of glass fiber business acquisitions in the U.K., Netherlands, and the U.S. in 2016 and 2017, the amount of normal waste that the NEG Group produces has increased dramatically. Moving forward, we will continue to strengthen our efforts overseas to reduce the amount of normal waste we generate.

#### Normal Waste (Landfill Waste D) per Total Weight of Products Sold

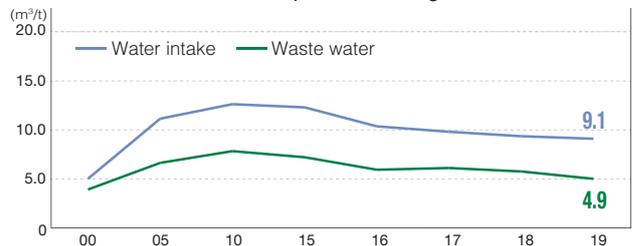


With regard to bulky construction waste requiring landfill disposal (Landfill Waste D), the majority of this waste is generated from glass melting furnace repairs and is comprised of unrecyclable waste brick. In 2017, we put in place a mechanism for shifting this waste to Social Recycling B by having a refractory manufacturer use waste chromium (Cr) bricks and zirconium (Zr) bricks as raw materials. This has also contributed to a significant reduction in landfill waste disposal expenses associated with Cr bricks, which have a particularly large environmental impact.

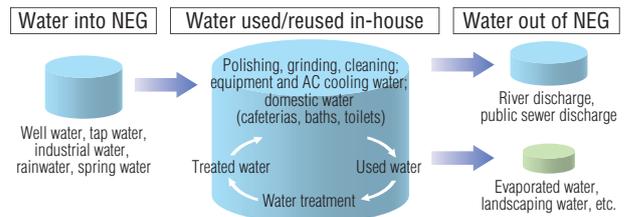
### ► Water Reduction

We believe that the level of manufacturing is represented in the way water is used. Consequently, by managing our water usage we are increasing our understanding of the entire glass manufacturing process, including melting, forming, processing and cleaning, and further improving our process technology and equipment. This graph shows the change over time in water intake and waste water per total weight of products sold. Although intensity increased after fiscal 2004 due to the rapid switchover from CRT to LCD, there has been an ongoing decline in intensity since fiscal 2014 thanks to efforts to increase utilization efficiency within the LCD business.

#### Water Intake/Waste Water per Total Weight of Products Sold



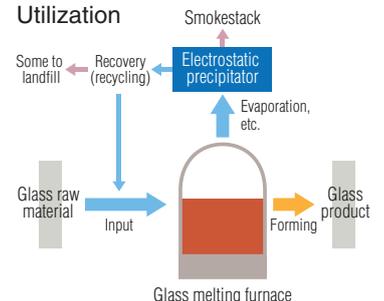
#### Water Flow



### ► Reducing Evaporated Glass Components in Glass Melting Furnaces

The exhaust gas from melting furnaces contains evaporated components derived from the raw materials of glass production. These evaporated components can be recycled if captured. By combining the reduction of evaporation from melting furnaces and efficient capture of the evaporated components, we are applying best practices to improve our melting process and energy conservation technology.

#### Glass Production Raw Material Utilization



## Our Global Warming Countermeasures

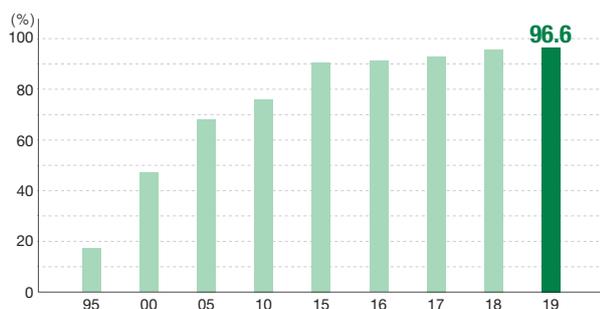
A significant amount of energy is used to melt glass. Therefore, we consider it our duty to further improve the energy efficiency of our melting furnaces.

### ► Oxy-fuel Firing Glass Melting Furnaces

Compared to air combustion furnaces, oxy-fuel firing furnaces remove more excess nitrogen. This has reduced the amount of exhaust gas (exhaust heat) and consequently lowered fuel and energy consumption. It has also reduced emissions of CO<sub>2</sub> and thermal nitrogen oxides (NOx).

In 1993, we installed the first oxy-fuel firing glass melting furnace in Japan. This technology has now been installed in almost all of our furnaces.

#### Percentage of Oxy-fuel Firing Furnaces among All Melting Furnaces



### ► Fuel Conversion in Glass Melting Furnaces

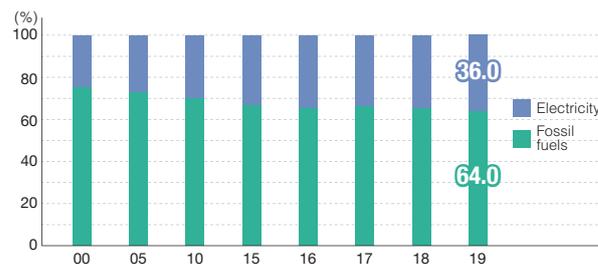
We have been switching to fuels with less environmental impact to operate our glass melting furnaces. We have switched from heavy oil to LPG and ultimately to natural gas and city gas, thus reducing CO<sub>2</sub> emissions.

### ► Increasing Electricity Usage in the Glass Melting Process

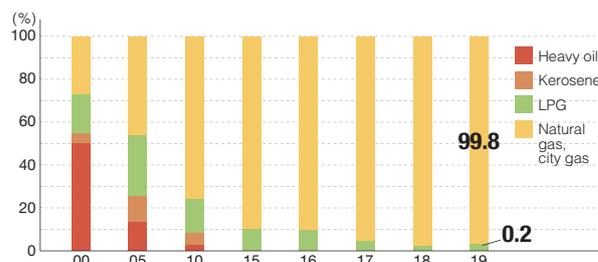
In the melting process, both gas and electricity are used. In electric heating, unlike that using gas fuel, electrodes are directly inserted into the molten glass, resulting in excellent thermal conductivity of the glass. Also, in heating with electricity, the amount of exhaust gas and exhaust heat can be reduced compared with that generated by heating with fossil fuels. Thus, if electricity usage is increased in percentage terms, energy savings and reductions in CO<sub>2</sub> emissions can be achieved.

We are continuing with group-wide activities aimed at increasing electricity as an energy source used to melt glass.

#### Electricity Usage



#### Fuel Conversion



## Protecting Biodiversity

As a way to demonstrate corporate social responsibility, we have an obligation to contribute to society, such as by protecting the environment through business activities. In addition to our existing efforts to reduce greenhouse gas emissions, we pursue other environmental conservation initiatives. These include contributing financial and volunteer support since 2018 to a local forestry cooperative focused on conserving Lake Biwa's surrounding forests as abundant water resources, which protect the area's biodiversity. Additionally, we participate in efforts to eradicate non-native fish species that threaten Lake Biwa's ecosystem.

In recognition of our efforts to protect biodiversity and promote sustainable usage of natural resources, NEG was awarded three stars—the highest possible rating—from Shiga Prefecture in the 2018 Shiga Biodiversity Awards. We will continue to pursue a diverse range of activities through which we can realize our commitment to protecting biodiversity.



The Mokumoku River, flowing through the site of the Notogawa Plant since its opening

## Analysis of Environmental Impact (fiscal 2019 consolidated basis)

INPUT		OUTPUT			
Energy consumption	Total energy .....	6,920,000 MWh*	Atmosphere	CO <sub>2</sub> .....	2,410,000 tons
	Electricity .....	2,490,000 MWh*		SOx .....	266 tons
	Fuel .....	4,430,000 MWh*		NOx .....	3,320 tons
		Particulate matter .....		240 tons	
Water	Water intake .....	8,630,000 m <sup>3</sup>	Water	Waste water .....	5,670,000 m <sup>3</sup>
			Waste	Total emissions .....	121,000 tons
				Recycling (Category B+C) .....	47,300 tons
				Landfill waste (Category D) .....	73,700 tons

\*The measurement unit for "Energy consumption" has been changed from TJ to MWh.

## Environmental Accounting (NEG)

(Millions of yen)

Category	Main Activities	2018		2019			
		2018.1.1-2018.12.31		2019.1.1-2019.12.31			
		Investment	Expenses	Investment	Expenses		
(1) Costs within operational area	Costs to reduce environmental footprint of production activities within operational area	Breakdown		74	4,366	67	4,320
			① Anti-pollution maintenance and management costs	67	571	53	862
			② Global environmental conservation costs	6	1,779	13	1,781
			③ Resource recycling costs	1	2,016	-	1,677
(2) Upstream and downstream costs	Costs to reduce environmental footprint of upstream and downstream production activities		-	297	-	213	
(3) Costs of management activities	Environmental conservation costs within management activities		2	689	-	873	
(4) Research and development costs	Environmental conservation costs of R&D activities		17	605	101	222	
(5) Costs for social initiatives	Environmental conservation costs of social initiatives		-	136	-	94	
(6) Environmental remediation costs	Costs to deal with damage to the environment		-	42	-	184	
(7) Other costs	Other costs relating to environmental conservation		-	17	90	105	
Total			93	6,152	258	6,011	

Note : Regarding expenses and investment, only costs clearly arising directly from environmental concerns have been aggregated. In regard to production facilities and R&D, only sections related to the environment have been included.

(Millions of yen)

Item	Contents	2018	2019
Total investment	Scheduled repair of glass melting furnaces and production rationalization investment, investment to improve manufacturing productivity of major products	15,819	24,166
Total research and development costs	Development and improvement of process technology, and development of products, including FPD glass and glass for electronic devices	6,958	6,901
Proceeds from sales of valuable resources related to ③ of (1)	Sales of scrap metal, scrap bricks, etc.	8	23
Proceeds from sales of valuable resources related to (2)		0	0

## Environmentally Friendly Products

We contribute to a sustainable society by providing products that help conserve the global environment.



### Saving energy and labor



**E Glass Fiber**  
(Chopped strands)

Used in plastic automobile parts, this material helps make cars lighter.



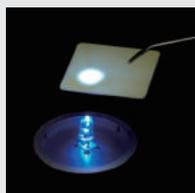
**G-Leaf™**  
Ultra-thin glass

Just micrometers thin, it helps make devices lighter. It also expands the possibilities of labor saving in manufacturing through its use in a roll-to-roll process.



**Lamion™**  
Ultra-thin glass  
laminated on resin

This material combines the superb properties of glass and resin. It is used on train station platform doors thanks to its strength and light weight.



**Lumiphous™**  
Phosphor-glass  
composite

This wavelength-converting material helps expand the range of applications for energy-saving LED lighting.



**Substrate glass with scattering layer**  
for OLED lighting

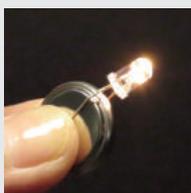
This substrate glass is used to effectively enhance light extraction efficiency in OLED lighting, a promising next-generation energy-saving light source.

### Creating energy



**E Glass Fiber**  
(Roving)

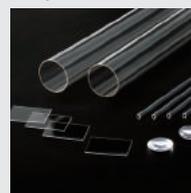
This material is used as reinforcement for the plastic blades of wind turbines. It also holds promise as reinforcement in the hydrogen gas tanks of fuel-cell vehicles.



**Solid-state sodium-ion secondary battery**  
(Under development)

This product uses a cathode material made of sodium-based crystallized glass. The material is highly safe and can be reliably procured.

### Reducing environmental impact



**High-efficiency deep UV-transmitting glass**

Used for LED antiseptic lamps, this glass can contribute to the replacement of antiseptic lamps that use environmentally harmful mercury.

## » NEWS »

### NEG receives Director's Award from Environmental Conservation Association of Shiga Prefecture

NEG received the Environmental Conservation Association of Shiga Prefecture's Director's Award in recognition of the excellent results achieved through its environmentally friendly business practices. These results include not only reduced environmental impact but also sustainable development, biodiversity protection, and high-level energy-saving initiatives.



# Diversity and Inclusion

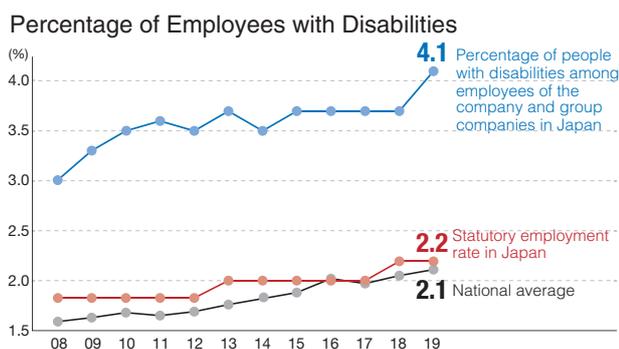
## We maintain a safe and healthy working environment for all employees and strive to develop competent human resources.

### Recruitment and Workplace Environment Maintenance

In addition to our continued commitment to provide employment for people with disabilities, we also strive to cultivate a work environment in which the diverse backgrounds and values of employees are respected and in which employee welfare and happiness is a priority.

#### ▶ Employment of People with Disabilities

In 1980, we established a special-purpose subsidiary aimed at employing people with disabilities. We were among the first six companies in Japan to do so. For its outstanding action in hiring and training young people, this subsidiary was in 2018 granted Youth Yell certification from Japan's Ministry of Health, Labor and Welfare, the second special-purpose company in Japan to be certified. As of the end of 2019, we had achieved a 4.1% employment rate for people with disabilities. We are now working to raise this to 4.4%, which is double the statutory requirement.



#### ▶ Support for Raising the Next Generation

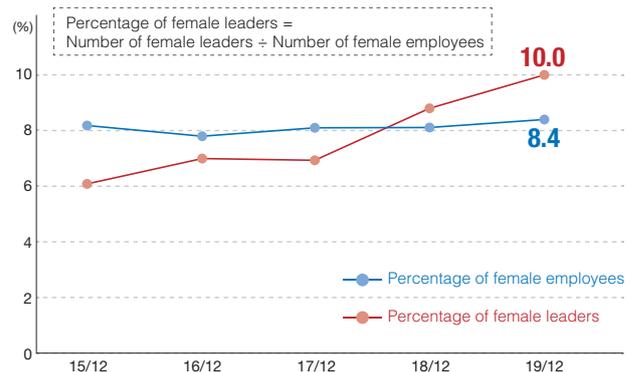
In February 2019, we received Platinum Kurumin accreditation under the Act on Advancement of Measures to Support Raising Next-Generation Children in Japan. In the past, we had received Kurumin accreditation four consecutive times, testament to our support of employees raising children. This time, we were accredited under the stricter requirements of the Platinum Kurumin mark in recognition of the efforts we made with our Fifth Action Plan (ending in 2018), under which we implemented measures encouraging employees to take annual paid leave and male employees to take childcare leave, and to build a pleasant working environment.

In addition to striving for a workplace where all employees can achieve a work-life balance, under our Women's Empowerment Project we hold events for female employees to exchange information and opinions with staff at other firms. We are also working to nurture female leaders for positions in management.

**6th Action Plan (Outline)**  
(April 1, 2018 to March 31, 2021)

- Childcare leave  
Women: To achieve more than 75% utilization rate  
Men: To achieve more than 13% utilization rate of those whose spouse has given birth
- Introduction of a new system, and strengthening of existing systems, to allow diverse work styles
- Measures to reduce overtime work
- Promotion of use of annual paid leave

#### Percentage of Female Employees and Female Leaders (NEG)



Note: A female leader is a female employee who oversees and manages subordinates.

### Responding to Globalization

In order to respond to the rapid globalization of our operations, we are actively hiring foreign nationals and cultivating global personnel who can work effectively anywhere in the world. We are also improving group synergy via personnel exchange between Japan and overseas subsidiaries, and among some overseas subsidiaries. In the future, we are considering creating a global human resource system in order to gain even greater synergy.



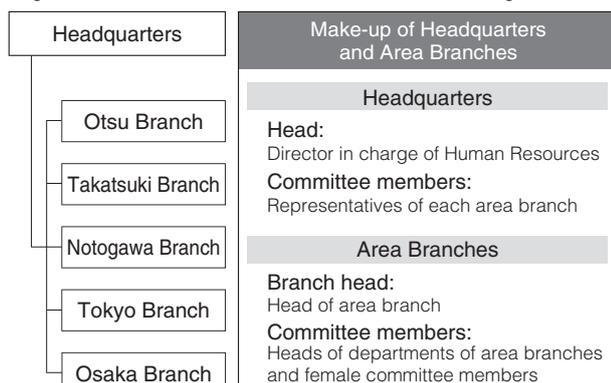
## Human Rights Initiatives

In line with the spirit of our corporate philosophy structure, respect for human rights are set forth in our Code of Conduct and Principles of Activities. Led by our committee on human rights issues, we perform human rights education and participate in and dispatch executives to projects run by administrative and external groups. Our company is a board member of the Shiga Prefecture Human Rights Issues Liaison Committee. Based in Shiga Prefecture, where our main operations are located, this committee allows us to play a leading role in promoting human rights in the region.



Human rights education

### Organization Chart of the Committee on Human Rights Issues



## Health and Productivity Management

Since we believe that improving the health of all employees leads to corporate growth, we are developing health and safety activities based on health and productivity management. We are also implementing work-style reforms. We have established key performance indicators (KPIs) for mental and physical health, and we are rolling out activities, education, and other initiatives aimed at improving the health of employees in each area.

### Mental and Physical Health KPIs

#### Physical health

Percentage with BMI of 25 or more  
 2019 34.7% ➔ 2022 28.0%

#### Mental health

Percentage suffering from high stress  
 Average for past 3 years 20.0% ➔ 2022 16.0%

NEG and the NEG Health Insurance Society were both certified in the 2020 Certified Health and Productivity Management Outstanding Organizations Recognition Program. The selections for certification are made jointly by the Ministry of Economy, Trade and Industry and the Nippon Kenko Kaigi. This certification system recognizes companies that engage in strategic health and productivity management for their employees. This marks our second consecutive certification.



### ▶ Health and Safety

Regarding health and safety, our Principles of Activities state that "We put safety first in everything we do, and we abide by all rules and regulations regarding health and safety." Under our company-wide health and safety program, our health and productivity management philosophy forms the basis for an action policy aimed at maintaining and improving the mental and physical health of each employee. This allows us to create a vibrant working environment that increases the creativity and productivity of the entire corporation.

In addition to periodic workplace patrols, we also implement educational awareness campaigns, hazard prevention activities, and information sharing among all operational sites both in Japan and overseas, so that we can increase awareness of health and safety issues and achieve our zero-accident benchmark. Furthermore, for all employees we have an EAP (Employee Assistance Program), mental health classes, and stress checks as part of our measures concerned with mental health.

In fiscal 2019, for the first time in five years, an employee at NEG suffered an accident resulting in lost workdays. This has brought into focus issues that we will incorporate into the health and safety initiatives we implement in fiscal 2020 and afterward in order to ensure we remain accident-free.

**Industrial accident frequency rate (NEG) 0.3**

**Organization Chart of Health and Safety for Each Area**



**Work-style Reforms**

We started promoting work-style reforms in 2017. By eliminating unnecessary and duplicated work through task inventory checks and maximizing use of IT, we have improved efficiency. These efforts have enabled us to reduce overtime work and increase the taking of paid leave. The benefits of these efforts have been returned to our employees via an expanded welfare program and other ways.

- Main Initiatives**
- Task inventory checks
  - Active use of IT
  - Conference reforms
  - 5 consecutive days of leave
  - Full implementation of no-overtime days
  - Telecommuting system
  - Re-employment system
- Newly established systems (from April 2020)
- Expansion of workplaces eligible for flextime
  - Work-style reform-related training
  - Provision of child-rearing and nursing care-related information

**Number of Paid Leave Days Taken**

	Days Taken	Percentage of Days Taken
Fiscal 2019	16.3	68%

**Human Resource Development**

In order to attain our goal of being the world's leading manufacturer of special glass, we need to have human resources capable of performing at a world-class level in all areas. We help our employees to better themselves by offering them a range of study opportunities, such as on-the-job training, level-specific training, global human resource training, skills training, and self-development programs that include acquiring industry certification.



Young employee training (5th year)

We will continue to provide our employees with more robust training, which will help them get to that next level.

**Training Programs**

Category	Items
Level-specific training	New employee training, young and mid-career employee training (3rd, 5th, 10th year), managerial position training, training for employees over the age of 50 (career development seminar, life plan seminar)
Global human resource training	Global Communications Program (GCP, practical business English training), overseas training for newly hired administrative employees, skills development language training (English, Chinese)
Skills training	Intellectual property training, accounting seminars, sales training, lectures on glass basics, AI and IoT seminars
Others	Compliance training, information security training, health and safety seminars, industry certification and other self-development programs

**NEWS**

**Recognized as Best Practices Company in Reducing Long Work Hours**

As part of the Ministry of Health, Labor and Welfare's campaign to eliminate overwork, the Director of the Shiga Labor Bureau visited the Otsu Plant. This visit was in response to the Directors of prefectural labor bureaus urging officials in each prefecture to identify and report on best practices companies that are being proactive about reducing long work hours. After the Shiga Director's visit, the Otsu Plant's practices were posted on the Shiga Prefecture website.

Our utilization of IT to streamline operations, our encouragement of employees to take five consecutive days of leave, and our efforts to improve working environments, among other work-style reform-focused practices, were well received.



The Director of the Shiga Labor Bureau visits NEG

## (( VOICE ))



Nippon Electric Glass (Malaysia)  
Production Director  
Zainol Aman Shah

Nippon Electric Glass (Malaysia) ("NEGM") was established in January 1991 as the first overseas production base funded completely by NEG. Initially, NEGM focused on CRT glass post-processing, but after some years it also began handling glass melting and forming. Since 1996, the diversity of products manufactured by NEGM has grown to include glass tubing, glass fiber, heat-resistant glass, and micro capillaries. It is currently the only plant in the NEG Group outside of Japan that produces multiple products.

Up until around 2001, production had been growing in response to robust demand for CRT glass, but, unfortunately, the market underwent a rapid contraction, which began in 2005 as a result of the shift from CRT to LCDs. While CRT glass production was shutting down all around the world, NEGM kept it going until the very end.

Employees constitute an important asset for a company—arguably its most important one. In 2006, the operation headquarters of the CRT business was moved from Japan to NEGM, and many Japanese CRT team members transferred to NEGM. This introduced a wealth of management and technology-related expertise to NEGM team members and resulted in a major change in awareness and approach. Particularly with regard to improving production systems and processes, we learned to place greater importance on the decision-making processes, and this has helped us be able to

respond more quickly and effectively when problems arise. As a result, we were able to continue until the final curtain closed on CRT production in 2014, making us the "last man standing." In this environment, a blending of Japanese and Malaysian thinking took place, fostering a corporate culture of "NEGM DNA."

Since 2007 we have increased production of glass fiber, to which the NEGM DNA of the CRT era has now passed, becoming more widespread and stronger in the thinking of not only our regular employees but also our contract workers. Since the acquisition of PPG's glass fiber business in Europe and the U.S., we have also been in greater communication with those bases, gaining knowledge and technological insights, which we use to improve our production systems and processes. All of this has enabled NEGM to grow significantly, not only in terms of production but also in terms of safety, quality, the environment, corporate social responsibility, governance, and much more. We have even received certification in the TFS (Together for Sustainability) program developed by our customers.

In order to achieve the current medium-term business plan, EGP2021, we are breaking it down into achievable targets for each level and establishing specific KPIs that we are working towards. We are also strictly implementing the PDCA cycle in order to ensure that we are always improving.

I believe that productivity improvement and cost reduction are never-ending tasks. Improvement and innovation are ideas that we seek to embed into each and every team member's cultural mindset so that, together, we can be the most competitive and customer-satisfying company in the world. NEGM Boleh!\*

\*Boleh means "can do it" in Malay.

### New Uniforms

In October 2019, on the occasion of our 70th anniversary, we introduced new company uniforms, which have been redesigned to better embody the essence of NEG within a theme that encompasses "glass, nature, the future, and diversity." In addition to improved functionality and comfort, a unisex design has also been adopted for these uniforms. This stylish, innovative design based around our corporate colors not only looks great but will contribute to employees feeling great.

The former uniforms have been collected from employees and donated to the Japan Relief Clothing Center, an authorized NPO.



# Community Contribution

**We contribute to the development of local communities through initiatives based on activities rooted in those communities. Our main activities include local clean-ups, plant tours, educational support, and involvement in community events.**

## Supporting the Younger Generation

### ▶ Welcoming Visitors to Our Plants and the Showroom

We welcome local children, students, and neighborhood councils to visit our plants and showroom. This supports the development of the younger generation and deepens the community's understanding of our business activities. In 2019, we welcomed about 520 visitors to tour our plants in Japan and overseas. For the year as a whole, a cumulative total of about 490 local residents visited facilities that we opened to the public.



Local high school students tour the Lexington plant of Electric Glass Fiber America



Students from Moriyama Junior High School visit the Otsu Plant as part of their environmental education



Supporting Shiga Prefecture's Lake Biwa Floating School program

### ▶ Visiting Lessons

Every year, we co-sponsor and cooperate with Otsu City Science Museum in their IF (Innovation for the Future) Class program. We give visiting lessons to local elementary and junior high school students, in which they can learn about the characteristics and functions of glass, and also enjoy the experience of cutting glass. In addition, since 2018 we have facilitated school field trips to our Otsu Plant. Through tours of our product showroom combined with hands-on lessons demonstrating the joys of manufacturing, we give children a terrific opportunity to experience the unlimited possibilities of glass.



An IF Class visiting lesson



Students visit our showroom

### ▶ Academic-industrial Collaboration

We concluded a comprehensive university-industry collaboration agreement with the University of Shiga Prefecture in 2007. Based on that agreement, we have been collaborating with the university on a variety of ongoing projects, which include the establishment of an endowment course, joint research and technological exchange on glass engineering, and supporting the development of tomorrow's leaders. In July 2019, based on the significant results that had been achieved, an agreement was reached on further extension of this collaboration and the continuation of NEG's endowment course. The extension period will be for a further three years after the current period ends on April 1, 2022.



Agreement reached on extending the agreement with the University of Shiga Prefecture

## Coexistence with Local Communities

To strengthen our ties with local communities, we carry out volunteer activities such as cleaning and planting greenery, host various events to which we invite local residents, and hold donation and support activities. See the table on the right for our activities in 2019 in Japan and overseas.

Employees joining local clean-ups	Approx. 300
People visiting our summer festival and other events	Approx. 2,750
People joining dialogue between NEG and neighborhood councils	Approx. 90

### ▶ Photographs of Main Events and Support Activities



Fishing tournament at Lake Biwa to remove non-native fish, Otsu Plant



Donation to a neighboring village by Electric Glass (Guangzhou)



Local children's center cultural activities facilitated by Electric Glass (Korea)



Children playing in Takatsuki Industrial Park (a park managed by Shiga-Takatsuki Plant, which is free to use)



A summer festival to which we invited local residents, Notogawa Plant



Donation by Paju Electric Glass to a birthday party for local elderly residents living alone

# Other Initiatives

## We will continue working to enhance our corporate value by maintaining active communication with various stakeholders.

We declare in our Group Code of Conduct that we disclose necessary corporate information in a timely and appropriate manner, and communicate on a broad basis with stakeholders. To enhance our corporate value, we strive to maintain active communication and deepen mutual understanding with various stakeholders.

### Communicating with Shareholders and Investors

#### ▶ General Meeting of Shareholders

On March 27, 2020, the 101st General Meeting of Shareholders was held in the conference room at our head office. Following a report on the fiscal year results and the state of our business, our management responded in a sincere manner to issues raised by our shareholders.



#### ▶ Communicating with Investors

We communicate with institutional investors, both in Japan and overseas, by way of various activities, including interviews, teleconferences, financial results briefing sessions, and participation in IR-related events organized by securities firms. The opinions and requests that we received from investors are fed back to our management and utilized to help improve our investor relations activities.

#### Fiscal 2019 Results

Total number of dialogues carried out 132 companies

#### ▶ Information Disclosure Tools

Through the use of the Tokyo Stock Exchange's Timely Disclosure Network (TDnet), and by posting information on our website in a timely fashion, we ensure that we provide prompt disclosure of information according to the rules for disclosure established by the Tokyo Stock Exchange. Furthermore, with regard to information that we believe will assist our

stakeholders in gaining a better understanding of our group, we make active use of news releases and web pages to present such information in a timely, appropriate, and fair manner, in accordance with Japan's Fair Disclosure Rules.

#### Basic Stance on Information Disclosure

<https://www.neg.co.jp/en/ir/disclosure/>

### Communicating with Customers

The principle of "customer first" is a key value in our corporate philosophy structure, and a commitment to being the world's best in customer satisfaction is one of our essential management policies, as we aim to further improve customer satisfaction while delivering safe, reliable, and high-quality products.

#### ▶ Product Safety

##### Basic Policy

We always offer safe products that consumers can use without worry.

1. Place the utmost importance on ensuring product safety from the design stage
2. Continue to improve product safety through quality assurance
3. Continue to reduce risks throughout the product life cycle
4. In case of an accident involving our product, disclose information and ensure product safety promptly

#### Product Safety Management Committee

We have established the Product Safety Management Committee to help improve the safety of our products. Committee members are selected from each Line Department involved in product manufacturing and sales, and from Staff Departments in charge of design of products and processes.

#### ▶ Quality Assurance

##### Basic Policy

Under the principle of "customer first," we offer products that satisfy customers through the cooperation of all divisions involved in product sales, manufacturing, and development.

1. Properly understand customer needs for products and continue to reflect these needs in product specifications
2. Market products that comply with appropriate quality assurance standards
3. Continue to improve product quality and enhance the level of manufacturing that ensures product quality
4. Take prompt and appropriate action to manage any problems reported by customers

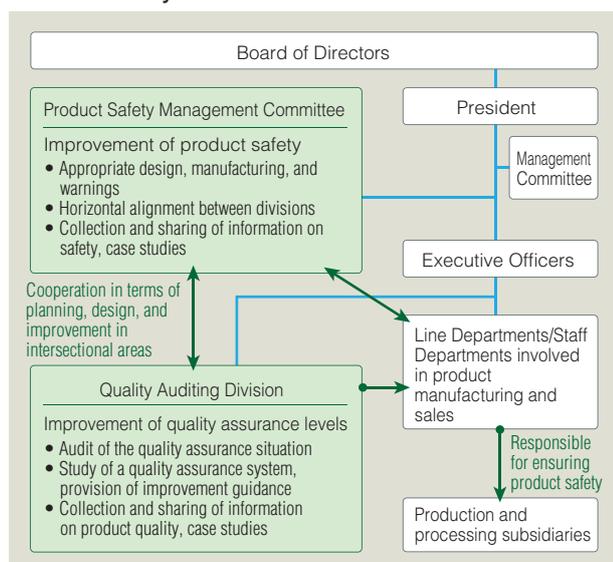
### Quality Assurance Department

We have established the Quality Assurance Department in each Line Department involved in product manufacturing to perform reliable quality assurance for each product in response to customer requests and to help increase manufacturing levels.

### Quality Auditing Division

We have established the Quality Auditing Division at our head office to drive cross-company efforts to improve quality assurance levels within the entire group.

### Diagram of the Product Safety and Quality Assurance System



### ► Communicating Product Information

We use exhibitions and our website as communication tools for introducing products and providing various relevant information.

#### Exhibitions

<https://www.neg.co.jp/en/company/exhibition/>



Briefing session for business partners

### Communicating with Business Partners

#### ► Basic Procurement Policy and Request to Our Business Partners

Under the basic procurement policy that we have established, we seek to build up reliable relationships with business partners who can provide us with products and services of superior quality and price competitiveness. In order to enhance the performance and efficiency of the entire supply chain, we ask our business partners to work to improve their competitiveness and to comply with laws and regulations.

#### Basic Procurement Policy

- ① Open and fair business dealings
- ② Harmonious mutual prosperity with partners
- ③ Compliance with social norms
- ④ Environmental consciousness (green procurement)

#### Request to Our Business Partners

- ① Competitiveness of purchasing products
- ② Compliance with laws, regulations, and social norms
- ③ Environmental preservation and operational safety
- ④ Appropriate information security
- ⑤ Sound corporate management

In addition, we place great importance on responsible procurement practices aimed at mitigating the risk of sourcing conflict minerals (such as tin, tantalum, tungsten, and gold), which are used to finance armed groups abetting human rights violations in the Democratic Republic of the Congo and adjoining countries.

#### Procurement

<https://www.neg.co.jp/en/company/procurement/>

#### ► Briefing Sessions for Business Partners and Global Meeting of Procurement Divisions of Our Group

Each year, we hold a briefing session for business partners in order to improve communication with these partners. We also hold a global meeting at which all the procurement divisions from manufacturing sites around the world gather to discuss the procurement policy of our group and to share ideas on compliance and other issues.

## Analysis of Operating Results and Financial Situation

### Business Climate and Operating Results

The global economic outlook remained unclear in fiscal 2019 due to the U.S.–China trade dispute and economic downturns in China and Europe. In Japan, despite an improved income environment and employment figures, exports and manufacturing weakened in the midst of slow demand from overseas.

Against this backdrop, in the Electronics and Information Technology sector, shipments of glass for flat-panel displays (FPDs) were down from the previous fiscal year due to operational decreases by panel manufacturers starting in the third quarter. Sales of cover glass (glass for chemical strengthening) were down from the previous fiscal year on sluggish demand for smartphones. Sales of glass for optical and electronic devices decreased overall from the previous fiscal year, despite steady shipments for products including phosphor-glass. The start of our joint venture in LTCC (low temperature co-fired ceramics) in October 2019 contributed to sales.

In the Performance Materials and Others sector, shipments of glass fiber were down from the previous fiscal year. This was due to a continuing slump in markets for automobile parts and lower-than-expected results for housing equipment applications. Shipments of glass tubing for pharmaceutical and medical use were up over the previous fiscal year due to robust demand in overseas markets. Heat-resistant glass sales were weak. Shipments of glass for building materials remained at the previous fiscal year's level. These factors combined to produce net sales of ¥257,190 million (\$2,338 million), a decrease of 14.4% from the previous fiscal year.

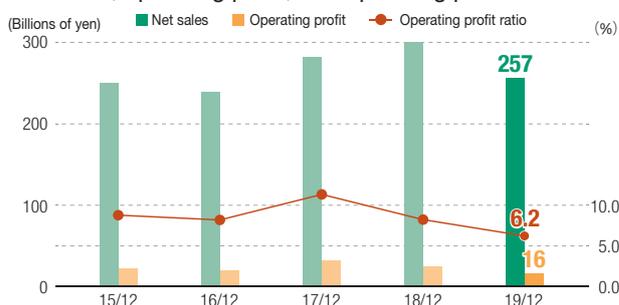
While productivity improved overall, operating profit was affected by decreased net sales, high costs due to a lower plant utilization rate for glass fiber, slow earnings recovery for our European and U.S. glass fiber subsidiaries, and rising raw material and fuel costs. The result was a gross profit of ¥54,567 million (\$496 million) and operating profit of ¥15,937 million (\$145 million), a 35.9% decrease from the previous fiscal year. As a result, the operating profit ratio was 6.2%, a decrease of 2.1 points from the previous fiscal year.

For the net amount of other income and expenses, we experienced total other expenses of ¥35,205 million (\$320 million). For other income, we recorded a reversal of reserve for special repairs. As other expenses, we recorded impairment losses on tangible fixed assets and goodwill at subsidiaries of our glass fiber business in Europe and the U.S., costs incurred from damage to some production equipment and temporary operation stoppages due to power outages at an overseas

subsidiary, and costs incurred from damage to some production equipment in Japan due to typhoons. As a result, loss before income taxes was ¥19,268 million (\$175 million) (the previous fiscal year's profit before income taxes was ¥25,429 million).

We recorded deferred income taxes of ¥11,298 million (\$103 million), a result of a reversal of deferred tax assets due to our consideration of factors such as performance in this fiscal year and coming years. As a result, loss attributable to owners of parent was ¥33,670 million (\$306 million) (the previous year's profit attributable to owners of parent was ¥15,200 million).

### Net sales, operating profit, and operating profit ratio



### Financial Position

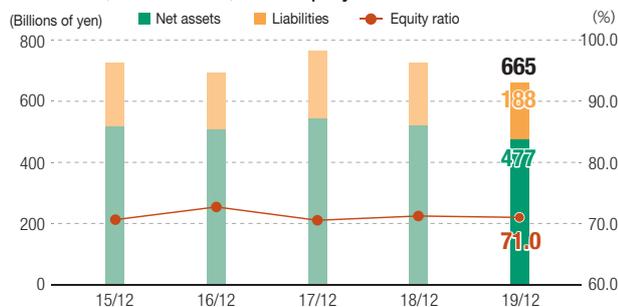
Total assets at the end of fiscal 2019 were ¥664,801 million (\$6,044 million), a decrease of ¥60,519 million (\$550 million) from the previous fiscal year. Current assets saw a decrease in cash and deposits due to factors such as repayment of debt. While notes and accounts receivable decreased due to lower sales, inventories increased. For property, plant, and equipment, besides the major factor of continuing depreciation, we recorded impairment losses on tangible fixed assets and goodwill at our glass fiber subsidiaries in Europe and the U.S., resulting in decreases in tangible and intangible fixed assets. And we reversed deferred tax assets due to our consideration of factors such as performance in this fiscal year and coming years.

Total liabilities were ¥187,646 million (\$1,706 million), a decrease of ¥16,126 million (\$147 million) from the previous fiscal year. For current liabilities, repayment of debt resulted in a decrease in short-term debt. In addition, a decrease in purchasing resulted in a decrease in notes and accounts payable, and in a decrease in accrued income taxes and reserve for loss on plant closing. For long-term liabilities, we recorded a reversal of reserve for special repairs after cancelling plans to repair our glass melting furnaces.

Total net assets at the end of fiscal 2019 were ¥477,155 million (\$4,338 million), a decrease of ¥44,393 million (\$404 million)

from the previous fiscal year. There was a decrease in retained earnings due to the loss attributable to owners of parent. There was also a decrease in foreign currency translation adjustments due to the strong performance of the yen against some foreign currencies.

### Liabilities, net assets, and equity ratio



### Cash Flow Analysis

#### Cash flows from operating activities

We recorded a loss before income taxes for fiscal 2019. In addition, while there was a decrease in reserve for special repairs, an increase in inventories, and a decrease in accounts payable, we recorded depreciation and amortization and an impairment loss. As a result, we recorded ¥21,637 million (\$197 million) in net cash provided by operating activities, a decrease of ¥30,365 million (\$276 million) from the previous fiscal year.

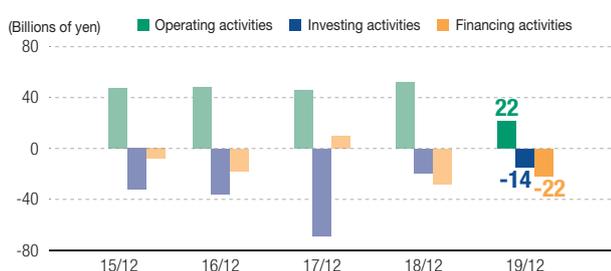
#### Cash flows from investing activities

Mainly due to acquisition of property, plant, and equipment including those for glass for FPDs and glass fiber, net cash used for investing activities was ¥14,317 million (\$130 million), a decrease of ¥5,234 million (\$48 million) from the previous fiscal year.

#### Cash flows from financing activities

We repaid some long-term debt. We also paid dividends to shareholders and to noncontrolling interests at subsidiaries. As a result, net cash used for financing activities was ¥21,976 million (\$200 million), a decrease of ¥6,527 million (\$59 million) from the previous fiscal year.

### Cash flows



After factoring in a reduction of ¥616 million (\$6 million) due to exchange rate changes on cash and cash equivalents, the balance of cash and cash equivalents at the end of fiscal 2019 was ¥100,977 million (\$918 million), a decrease of ¥15,272 million (\$139 million) from the previous fiscal year.

### Capital Expenditure

We invested ¥20,160 million (\$183,273 million) in capital expenditure during fiscal 2019. Key expenditures included production facility capacity enhancement, equipment upgrading to improve productivity, and the periodic repair of glass melting furnaces.

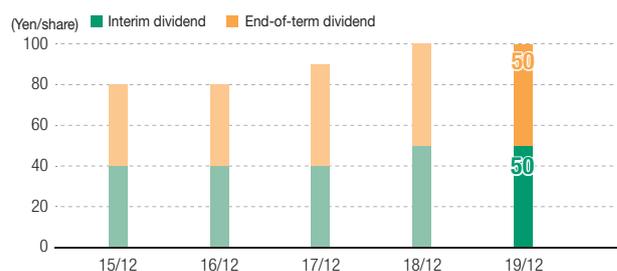
In the Electronics and Information Technology sector, the primary investment expenditure was to improve production processes of glass for FPDs, while in the Performance Materials and Others sector, the primary investment expenditure was in upgrading of production equipment.

### Dividend Policy

We view shareholder returns as a key management priority. We seek to ensure that shareholder dividends are stable in the long term and are not seriously affected by fluctuations in business results. We determine the dividend amount in light of our financial position and other factors, while aiming for a dividend on equity (DOE) ratio of at least 2%. We also maintain flexibility in our dividend policy so that we can adapt and adjust to how well we have met the goals in our medium-term business plan.

The end-of-term dividend for fiscal 2019 was ¥50 (\$0.46) per share. When combined with the interim dividend of ¥50 (\$0.46) per share, the annual dividend for fiscal 2019 amounted to ¥100 (\$0.91). For the next fiscal year, we plan to pay the same interim, end-of-term, and annual dividends as in fiscal 2019.

### Cash dividends\*



\* Per share of common stock amounts are retroactively adjusted for subsequent stock consolidation.

## Consolidated Financial Summary

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries for the Ten Most Recent Years

\*Fiscal year ended December 31, 2014 was a nine-month period due to a change in the Company's fiscal year-end.

	2011/3	2012/3	2013/3	2014/3
<b>For the year</b>				
Net sales	¥ 390,196	¥ 338,214	¥ 287,304	¥ 252,548
Operating profit	117,471	61,639	24,968	16,171
Profit (loss) attributable to owners of parent	68,609	19,409	10,603	12,432
Depreciation and amortization	52,699	54,785	46,105	35,891
Capital expenditures	110,025	98,788	37,487	46,962
Research and development	4,553	6,464	6,833	6,920
<b>At year-end</b>				
Total assets	¥ 692,622	¥ 687,070	¥ 697,386	¥ 707,021
Current assets	238,908	224,416	243,577	247,502
Net property, plant and equipment	417,423	420,311	395,376	393,751
Current liabilities	142,327	135,200	88,038	86,970
Interest-bearing debt	94,273	86,812	102,604	99,492
Net assets	468,038	475,736	495,295	510,807
<b>Cash flows</b>				
Cash flows from operating activities	¥ 133,391	¥ 83,737	¥ 55,111	¥ 46,700
Cash flows from investing activities	(96,822)	(79,827)	(46,545)	(33,843)
Cash flows from financing activities	(11,774)	(14,731)	7,667	(11,190)
Cash and cash equivalents at end of year	116,366	105,210	121,741	123,888
<b>Per share of common stock (yen and dollars)</b>				
Profit (loss) attributable to owners of parent	¥ 689.59	¥ 195.09	¥ 106.58	¥ 124.97
Net assets	4,660.87	4,727.33	4,914.84	5,057.28
Cash dividends	65.00	75.00	80.00	80.00
<b>Operating profit ratio (%)</b>	30.1	18.2	8.7	6.4
<b>Equity ratio (%)</b>	66.9	68.4	70.1	71.2
<b>Return on equity (%)</b>	15.8	4.2	2.2	2.5

Notes: 1. Profit (loss) attributable to owners of parent per share and net assets per share are calculated based on the average number of shares outstanding during each year and the number of shares outstanding at the end of each year, respectively.

2. As there was no dilutive stock outstanding during these years, diluted profit attributable to owners of parent per share was not calculated.

3. U.S. dollar amounts have been translated from Japanese yen solely for the convenience of the reader using the prevailing exchange rate at December 31, 2019 of ¥110 to U.S. \$1.00.

4. As of December 31, 2019, Nippon Electric Glass Co., Ltd. had 26 consolidated subsidiaries and 1 affiliated company accounted for by the equity method.

(Millions of yen and thousands of U.S. dollars, except per share figures)

	2014/12*	2015/12	2016/12	2017/12	2018/12	2019/12	
	¥ 192,692	¥ 251,178	¥ 239,412	¥ 282,447	¥ 300,327	¥ 257,190	\$ 2,338,091
	5,224	22,035	19,571	32,202	24,866	15,937	144,882
	5,938	9,637	4,969	27,184	15,200	(33,670)	(306,091)
	28,420	37,154	31,256	28,735	29,776	28,576	259,782
	45,214	49,212	46,429	52,913	49,340	20,160	183,273
	5,527	6,183	6,658	6,898	6,959	6,901	62,736
	¥ 731,185	¥ 726,938	¥ 693,918	¥ 764,420	¥ 725,320	¥ 664,801	\$ 6,043,645
	264,001	267,430	254,870	262,932	247,742	241,483	2,195,300
	397,273	386,013	367,399	393,818	386,541	358,682	3,260,745
	82,701	105,400	86,025	103,836	112,992	96,485	877,136
	109,141	109,731	101,997	120,661	112,005	100,479	913,445
	522,577	519,801	509,564	543,789	521,548	477,155	4,337,773
	¥ 38,837	¥ 46,797	¥ 48,261	¥ 46,160	¥ 52,002	¥ 21,637	\$ 196,700
	(29,264)	(32,638)	(36,139)	(68,644)	(19,551)	(14,317)	(130,154)
	1,699	(7,892)	(17,624)	9,797	(28,503)	(21,976)	(199,782)
	129,823	133,856	126,167	113,835	116,249	100,977	917,973
	¥ 59.69	¥ 96.88	¥ 49.95	¥ 273.29	¥ 154.26	¥ (348.50)	\$ (3.17)
	5,163.32	5,159.30	5,069.60	5,416.93	5,346.03	4,885.50	44.41
	60.00	80.00	80.00	90.00	100.00	100.00	0.91
	2.7	8.8	8.2	11.4	8.3	6.2	
	70.2	70.6	72.7	70.5	71.2	71.0	
	1.2	1.9	1.0	5.2	2.9	(6.8)	

5. Capital expenditures for FY2014/12 were calculated based on the period from April 1, 2014 to December 31, 2014 for the Company and its domestic consolidated subsidiaries and the period from January 1, 2014 to December 31, 2014 for the Company's overseas consolidated subsidiaries.

6. Per share of common stock amounts are retroactively adjusted for subsequent stock consolidation. On July 1, 2017, common shares were consolidated at a ratio of 5 to 1 based on the number of shares held by shareholders of record as of June 30, 2017.

7. The Company and its consolidated subsidiaries have applied the "Partial Amendments to Accounting Standard for Tax Effect Accounting" (Accounting Standards Board of Japan (ASBJ) Statement No. 28, February 16, 2018) from the beginning of the fiscal year ended December 31, 2019. Accordingly, total assets and current assets for the fiscal year ended December 31, 2018 reflect the retroactive application of this standard.

# Consolidated Financial Statements

## Consolidated Balance Sheets

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries  
December 31, 2018 and 2019

ASSETS	Millions of yen		Thousands of U.S. dollars (Note 1)
	December 31, 2018	December 31, 2019	December 31, 2019
<b>Current assets:</b>			
Cash and time deposits (Note 5, 8 and 16)	¥ 116,786	¥ 101,509	\$ 922,810
Notes and accounts receivable – trade (Note 5)	56,796	52,716	479,236
Allowance for doubtful receivables	(191)	(166)	(1,509)
Inventories (Note 9)	68,116	81,987	745,336
Other current assets (Note 5 and 7)	6,235	5,437	49,427
Total current assets	247,742	241,483	2,195,300
<b>Property, plant and equipment (Note 10):</b>			
Land	12,745	11,468	104,254
Building and structures	165,698	162,686	1,478,964
Machinery and equipment (Note 3)	726,468	705,925	6,417,500
Construction in progress	13,405	12,423	112,936
Total property, plant and equipment	918,316	892,502	8,113,654
Accumulated depreciation	(531,775)	(533,820)	(4,852,909)
Net property, plant and equipment	386,541	358,682	3,260,745
<b>Intangible assets (Note 10):</b>			
Goodwill	19,073	–	–
Other intangible assets	12,864	7,306	66,418
Total intangible assets	31,937	7,306	66,418
<b>Investments and other assets:</b>			
Investment securities (Note 5 and 6)	46,415	49,037	445,791
Investment in affiliates (Note 6)	3,296	3,441	31,282
Deferred tax assets (Note 2 and 12)	6,476	2,318	21,073
Other assets	2,913	2,534	23,036
Total investments and other assets	59,100	57,330	521,182
<b>Total assets</b>	¥ 725,320	¥ 664,801	\$ 6,043,645

The accompanying notes to the consolidated financial statements are an integral part of these statements.

## LIABILITIES AND NET ASSETS

	Millions of yen		Thousands of U.S. dollars (Note 1)
	December 31, 2018	December 31, 2019	December 31, 2019
<b>Current liabilities:</b>			
Short-term debt, including current portion of long-term debt (Note 5 and 11)	¥ 45,351	¥ 35,875	\$ 326,136
Notes and accounts payable (Note 5):			
Trade	38,774	34,893	317,209
Construction and other	10,859	9,788	88,982
Accrued expenses	11,376	10,884	98,945
Accrued income taxes	2,451	1,356	12,327
Reserve for loss on plant closing	2,063	1,047	9,518
Other reserves	105	61	555
Other current liabilities (Note 3, 5 and 7)	2,013	2,581	23,464
Total current liabilities	112,992	96,485	877,136
<b>Long-term liabilities:</b>			
Long-term debt (Note 5 and 11)	66,654	64,604	587,309
Deferred tax liabilities (Note 2 and 12)	2,351	10,278	93,436
Reserve for special repairs	17,775	11,867	107,882
Other reserves	20	19	173
Net defined benefit liability (Note 14)	1,666	940	8,545
Other long-term liabilities (Note 3, 5, 7 and 13)	2,314	3,453	31,391
Total long-term liabilities	90,780	91,161	828,736
<b>Net assets (Note 15):</b>			
<b>Shareholders' equity:</b>			
Common stock			
Authorized – 240,000,000 shares in Dec. 2018 and Dec. 2019			
Issued – 99,523,246 shares in Dec. 2018 and Dec. 2019	32,156	32,156	292,327
Capital surplus	34,365	34,358	312,345
Retained earnings	448,909	405,560	3,686,909
Treasury stock at cost			
2,918,451 shares in Dec. 2018			
2,904,626 shares in Dec. 2019	(10,308)	(10,258)	(93,254)
Total shareholders' equity	505,122	461,816	4,198,327
<b>Accumulated other comprehensive income:</b>			
Valuation difference on available-for-sale securities	19,482	21,148	192,255
Deferred gains on hedges	109	48	436
Foreign currency translation adjustments	(8,261)	(10,981)	(99,827)
Total accumulated other comprehensive income	11,330	10,215	92,864
<b>Noncontrolling interests</b>			
	5,096	5,124	46,582
Total net assets	521,548	477,155	4,337,773
<b>Contingent liabilities (Note 17)</b>			
<b>Total liabilities and net assets</b>	¥ 725,320	¥ 664,801	\$ 6,043,645

## Consolidated Statements of Operations

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries

Years Ended December 31, 2018 and 2019

Millions of yen

Thousands of  
U.S. dollars (Note 1)

	December 31, 2018	December 31, 2019	December 31, 2019
<b>Net sales</b>	¥ 300,327	¥ 257,190	\$ 2,338,091
<b>Cost of sales</b>	233,234	202,623	1,842,027
Gross profit	67,093	54,567	496,064
<b>Selling, general and administrative expenses</b>	42,227	38,630	351,182
Operating profit	24,866	15,937	144,882
<b>Other income (expenses):</b>			
Interest and dividend income	1,913	1,975	17,955
Interest expense	(1,630)	(696)	(6,327)
Depreciation of idle property, plant and equipment	(736)	(584)	(5,309)
Subsidy income	278	440	4,000
Loss on impairment (Note 10)	(81)	(34,775)	(316,136)
Reversal of reserve for special repairs	3,775	4,394	39,945
Foreign exchange losses	(4,950)	(1,604)	(14,582)
Insurance claim income	-	616	5,600
Gain on revision of retirement benefit plan (Note 14)	966	-	-
Loss on suspension of production facilities	(951)	-	-
Loss on accident	-	(3,756)	(34,146)
Other, net (Note 6)	1,979	(1,215)	(11,046)
Total other income (expenses)	563	(35,205)	(320,046)
<b>Profit (loss) before income taxes</b>	25,429	(19,268)	(175,164)
<b>Income taxes (Note 12):</b>			
Current	4,873	2,672	24,291
Deferred	4,869	11,298	102,709
Total income taxes	9,742	13,970	127,000
<b>Profit (loss)</b>	15,687	(33,238)	(302,164)
<b>Profit attributable to noncontrolling interests</b>	487	432	3,927
<b>Profit (loss) attributable to owners of parent</b>	¥ 15,200	¥ (33,670)	\$ (306,091)
		Yen	U.S. dollars (Note 1)
<b>Amount per share of common stock:</b>			
Profit (loss) attributable to owners of parent (Note 2)	¥ 154.26	¥ (348.50)	\$ (3.17)
Diluted profit attributable to owners of parent (Note 2)	-	-	-
Cash dividends applicable to the year (Note 15)	100.00	100.00	0.91

The accompanying notes to the consolidated financial statements are an integral part of these statements.

## Consolidated Statements of Comprehensive Income

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries

Years Ended December 31, 2018 and 2019

Millions of yen

Thousands of  
U.S. dollars (Note 1)

	December 31, 2018	December 31, 2019	December 31, 2019
<b>Profit (loss)</b>	¥ 15,687	¥ (33,238)	\$ (302,164)
<b>Other comprehensive income (Note 4):</b>			
Valuation difference on available-for-sale securities	(10,642)	1,666	15,145
Deferred gains (losses) on hedges	318	(61)	(554)
Foreign currency translation adjustments	(6,846)	(2,647)	(24,064)
Remeasurements of defined benefit plans, net of tax	(347)	-	-
Share of other comprehensive income of associates accounted for using equity method	(135)	(73)	(663)
Total other comprehensive income (loss)	(17,652)	(1,115)	(10,136)
<b>Comprehensive income (loss)</b>	¥ (1,965)	¥ (34,353)	\$ (312,300)
<b>Comprehensive income (loss) attributable to:</b>			
Owners of the parent	¥ (2,452)	¥ (34,785)	\$ (316,227)
Noncontrolling interests	487	432	3,927

The accompanying notes to the consolidated financial statements are an integral part of these statements.

## Consolidated Statements of Changes in Net Assets

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries

Years Ended December 31, 2018 and 2019

	Thousands of shares	Millions of yen									
	Number of shares of common stock issued	Common stock	Capital surplus	Retained earnings	Treasury stock	Valuation difference on available-for-sale securities	Deferred gains (losses) on hedges	Foreign currency translation adjustments	Remeasurements of defined benefit plans, net of tax	Non-controlling interests	Total net assets
<b>Balance at January 1, 2018</b>	99,523	¥ 32,156	¥ 34,320	¥ 443,668	¥ (307)	¥ 30,124	¥ (209)	¥ (1,280)	¥ 347	¥ 4,970	¥ 543,789
Profit attributable to owners of parent	-	-	-	15,200	-	-	-	-	-	-	15,200
Cash dividends paid	-	-	-	(9,947)	-	-	-	-	-	-	(9,947)
Acquisition of treasury stock (Note 15)	-	-	-	-	(10,001)	-	-	-	-	-	(10,001)
Capital increase of consolidated subsidiaries	-	-	45	-	-	-	-	-	-	-	45
Other	-	-	-	(12)	-	-	-	-	-	-	(12)
Net changes in items other than shareholders' equity	-	-	-	-	-	(10,642)	318	(6,981)	(347)	126	(17,526)
<b>Balance at January 1, 2019</b>	99,523	¥ 32,156	¥ 34,365	¥ 448,909	¥ (10,308)	¥ 19,482	¥ 109	¥ (8,261)	¥ -	¥ 5,096	¥ 521,548
Loss attributable to owners of parent	-	-	-	(33,670)	-	-	-	-	-	-	(33,670)
Cash dividends paid	-	-	-	(9,662)	-	-	-	-	-	-	(9,662)
Acquisition of treasury stock	-	-	-	-	(0)	-	-	-	-	-	(0)
Disposition of treasury stock	-	-	(7)	-	50	-	-	-	-	-	43
Other	-	-	-	(17)	-	-	-	-	-	-	(17)
Net changes in items other than shareholders' equity	-	-	-	-	-	1,666	(61)	(2,720)	-	28	(1,087)
<b>Balance at December 31, 2019</b>	99,523	¥ 32,156	¥ 34,358	¥ 405,560	¥ (10,258)	¥ 21,148	¥ 48	¥ (10,981)	¥ -	¥ 5,124	¥ 477,155

	Thousands of U.S. dollars (Note 1)										
	Common stock	Capital surplus	Retained earnings	Treasury stock	Valuation difference on available-for-sale securities	Deferred gains (losses) on hedges	Foreign currency translation adjustments	Remeasurements of defined benefit plans, net of tax	Non-controlling interests	Total net assets	
<b>Balance at January 1, 2019</b>	\$ 292,327	\$ 312,409	\$ 4,080,991	\$ (93,709)	\$ 177,110	\$ 990	\$ (75,100)	\$ -	\$ 46,328	\$ 4,741,346	
Loss attributable to owners of parent	-	-	(306,091)	-	-	-	-	-	-	(306,091)	
Cash dividends paid	-	-	(87,836)	-	-	-	-	-	-	(87,836)	
Acquisition of treasury stock	-	-	-	(0)	-	-	-	-	-	(0)	
Disposition of treasury stock	-	(64)	-	455	-	-	-	-	-	391	
Other	-	-	(155)	-	-	-	-	-	-	(155)	
Net changes in items other than shareholders' equity	-	-	-	-	15,145	(554)	(24,727)	-	254	(9,882)	
<b>Balance at December 31, 2019</b>	\$ 292,327	\$ 312,345	\$ 3,686,909	\$ (93,254)	\$ 192,255	\$ 436	\$ (99,827)	\$ -	\$ 46,582	\$ 4,337,773	

The accompanying notes to the consolidated financial statements are an integral part of these statements.

## Consolidated Statements of Cash Flows

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries  
Years Ended December 31, 2018 and 2019

Millions of yen

Thousands of  
U.S. dollars (Note 1)

	December 31, 2018	December 31, 2019	December 31, 2019
<b>Cash flows from operating activities:</b>			
Profit (loss) before income taxes	¥ 25,429	¥ (19,268)	\$ (175,164)
Depreciation and amortization	29,776	28,576	259,782
Loss on suspension of production facilities	951	-	-
Loss on impairment of fixed assets	81	34,775	316,136
Decrease in reserve for special repairs	(5,503)	(5,908)	(53,709)
Interest and dividend income	(1,913)	(1,975)	(17,955)
Interest expense	1,630	695	6,318
Foreign exchange losses	3,819	1,107	10,064
Decrease in notes and accounts receivable, trade	2,693	3,074	27,945
Decrease (increase) in inventories	71	(14,210)	(129,182)
Increase (decrease) in notes and accounts payable	2,971	(3,513)	(31,936)
Other, net	(4,569)	425	3,864
Subtotal	55,436	23,778	216,163
Interest and dividends received	1,902	1,943	17,664
Interest paid	(1,460)	(771)	(7,009)
Proceeds from insurance claim income	-	616	5,600
Income taxes paid	(3,876)	(3,929)	(35,718)
Net cash provided by operating activities	52,002	21,637	196,700
<b>Cash flows from investing activities:</b>			
Proceeds from sales of marketable and investment securities	3,449	125	1,136
Purchases of property, plant and equipment	(25,477)	(13,963)	(126,936)
Purchase of shares of subsidiaries resulting in change in scope of consolidation	-	(202)	(1,836)
Other, net	2,477	(277)	(2,518)
Net cash used in investing activities	(19,551)	(14,317)	(130,154)
<b>Cash flows from financing activities:</b>			
Decrease in short-term debt, net	(4,893)	(697)	(6,336)
Proceeds from long-term borrowings	5,592	1,225	11,137
Repayment of long-term borrowings	(8,927)	(11,759)	(106,900)
Proceeds from issuance of unsecured bonds	-	10,000	90,909
Redemption of unsecured bonds	-	(10,000)	(90,909)
Acquisition of treasury stock	(10,001)	(0)	(3)
Cash dividends paid	(9,942)	(9,662)	(87,836)
Cash dividends paid to noncontrolling interests	(416)	(593)	(5,390)
Other, net	84	(490)	(4,454)
Net cash used in financing activities	(28,503)	(21,976)	(199,782)
Effect of exchange rate changes on cash and cash equivalents	(1,534)	(616)	(5,600)
Net increase (decrease) in cash and cash equivalents	2,414	(15,272)	(138,836)
Cash and cash equivalents at beginning of year	113,835	116,249	1,056,809
Cash and cash equivalents at end of year (Note 8)	¥ 116,249	¥ 100,977	\$ 917,973

The accompanying notes to the consolidated financial statements are an integral part of these statements.

## Notes to Consolidated Financial Statements

Nippon Electric Glass Co., Ltd. and Consolidated Subsidiaries

### 1. Basis of presenting consolidated financial statements

The accompanying consolidated financial statements of Nippon Electric Glass Co., Ltd. ("the Company") and its consolidated subsidiaries have been prepared in accordance with the provisions set forth in the Japanese Financial Instruments and Exchange Law and its related accounting regulations and in conformity with accounting principles generally accepted in Japan ("Japanese GAAP"), which are different in certain respects as to application and disclosure requirements from International Financial Reporting Standards ("IFRS").

The accompanying consolidated financial statements have been restructured and translated into English with certain expanded disclosures from the consolidated financial statements of the Company prepared in accordance with Japanese GAAP and filed with the appropriate Local Finance Bureau of the Ministry of Finance as required by the Japanese Financial Instruments and Exchange Law. Certain supplementary information included in the statutory Japanese language consolidated financial statements, but not required for fair presentation, is not presented in the accompanying consolidated financial statements.

The translations of Japanese yen amounts into U.S. dollar amounts are included solely for the convenience of the readers outside Japan, using the prevailing exchange rate at December 31, 2019, which was ¥110 to U.S. \$1.00. The translations, provided for convenience, should not be construed as representations that the Japanese yen amounts have been, could have been or could in the future be converted into U.S. dollars at this or any other rate of exchange.

### 2. Significant accounting policies

#### (a) Consolidation policies

Under Japanese GAAP, companies are required to consolidate all significant equity investments over which they have the power of control through a majority of voting rights or the existence of certain other conditions evidencing control.

The accompanying consolidated financial statements include the accounts of the Company and substantially all of its subsidiaries. All significant intercompany transactions and account balances are eliminated upon consolidation.

Investments in unconsolidated subsidiaries and affiliates are accounted for by the equity method or by cost. If the equity method of accounting had been applied to the investments in these companies accounted for by cost, the effect on the accompanying consolidated financial statements would not have been material.

#### (b) Translation of foreign currencies

All short-term and long-term monetary receivables and payables denominated in foreign currencies are translated into Japanese yen at the relevant exchange rates at the balance sheet date.

The financial statements of the Company's overseas consolidated subsidiaries are translated into Japanese yen at the current rates for assets and liabilities and at historical rates for shareholders' equity accounts. Average yearly rates are used for the translation of income and expense amounts. Foreign currency translation adjustments are recorded in net assets.

#### (c) Cash and cash equivalents

In preparing the consolidated statements of cash flows, cash on hand, deposits placed with banks on demand and short-term highly liquid investments with maturities of three months or less when deposited or purchased are considered to be cash and cash equivalents.

#### (d) Marketable and investment securities

Available-for-sale securities with observable fair market values are stated at fair market value. Unrealized gains and losses on these securities are reported, net of applicable income taxes, as a separate component of net assets. Realized gains and losses on the sale of such securities are calculated using moving average cost.

#### (e) Allowance for doubtful receivables

Allowance for doubtful receivables is provided in an amount sufficient to cover possible losses on collection. For regular receivables, it consists of an estimated amount based on the historical ratio of bad debt losses. For receivables from customers in financial difficulty, it consists of the estimated noncollectable amounts of specific doubtful receivables.

#### (f) Inventories

Inventories are stated principally at the lower of cost or net realized value, with cost determined by the moving average method.

#### (g) Property, plant and equipment (except for leased property)

Property, plant and equipment are stated at cost.

Depreciation of property, plant and equipment of the Company and its domestic consolidated subsidiaries is calculated by the declining balance method at rates based on the estimated useful life of the assets. Buildings, excluding facilities attached to buildings, acquired after March 31, 1998, are depreciated using the straight-line method. Facilities attached to buildings and structures acquired after March 31, 2016, are also depreciated using the straight-line method. Depreciation of property, plant and equipment of overseas consolidated subsidiaries is calculated principally by the straight-line method based on the estimated useful life of the assets. The estimated useful life of machinery and equipment is generally from 6 to 9 years.

#### (h) Intangible assets (except for leased property)

Intangible assets are amortized by the straight-line method.

#### (i) Reserve for directors' bonuses

To provide a reserve for directors' bonuses, the Company and its consolidated subsidiaries record the amount estimated to be paid to directors after the balance sheet date for their services rendered during the fiscal period.

**(j) Severance and retirement benefits**

The Company and its consolidated subsidiaries, excluding certain consolidated subsidiaries, principally use a simplified method for calculating projected benefit obligation which provides for accrued retirement benefits for voluntary retirement at the end of the fiscal year because few employees have applied for the defined benefit pension plans.

In certain consolidated subsidiaries, the allowance for employees' severance and retirement benefits is recognized in an amount after deducting pension assets from retirement benefits for the net defined benefit liability. Net defined benefit liability and retirement benefit costs are as follows.

**(1) Allocation of projected retirement benefit obligation**

In calculating the retirement benefit obligation, the benefit formula method is used to allocate the projected retirement benefit obligation to the estimated years of service of the eligible employees.

**(2) Method for amortizing actuarial gain or loss**

Depending on each company's situation, actuarial gain or loss is amortized at the time of occurrence or by the straight-line method over a period not exceeding the estimated average remaining service years of employees from the next year following the time of occurrence.

**(k) Directors' retirement benefits**

To provide for directors' retirement benefits, the Company and its consolidated subsidiaries had recorded the amount that was required by internal corporate policy at the end of the current fiscal year. However, the directors' retirement benefits system was abolished in June 2004, and the Company has ceased recording these provisions since July 2004.

**(l) Reserve for special repairs**

To prepare for the significant recurring repairs required of glass-melting furnaces, estimated costs for the next repairs are accrued within the period between the previous repair and the next envisioned repair.

**(m) Reserve for loss on plant closing**

To provide for loss on plant closing, the Company recorded the estimated cost of closing the plant.

**(n) Income taxes**

The tax effects of loss carryforwards and temporary differences between the financial statement basis and the tax basis of assets and liabilities are recognized as deferred tax assets and liabilities. The provision for income taxes is computed based on the pretax income included in the consolidated statements of operations.

**(o) Research and development**

Costs related to research and development activities are charged to income as incurred and amounted to ¥6,959 million and ¥6,901 million (\$62,736 thousand) for the fiscal years ended December 31, 2018 and 2019, respectively.

**(p) Profit (loss) attributable to owners of parent per share**

The computations of profit attributable to the owners of the parent per share are based on the average number of shares of common stock outstanding during each year. Diluted profit attributable to the owners of the parent per share of common stock is computed based on the average number of shares outstanding increased by the number of

shares that would be outstanding assuming all dilutive convertible bonds were converted at the beginning of the year at the current conversion price. Diluted profit attributable to the owners of the parent per share has not been presented because there were no potentially dilutive shares of common stock for the year ended December 31, 2018. Diluted profit attributable to the owners of the parent per share has not been presented because the Company and its consolidated subsidiaries recorded loss attributable to the owners of the parent and there were no potentially dilutive shares of common stock for the year ended December 31, 2019.

**(q) Derivatives and hedge accounting**

The Company and its consolidated subsidiaries state derivative financial instruments at fair value and recognize changes in the fair value as gain or loss, unless the derivative financial instruments are used for hedging purposes.

Forward foreign exchange contracts and interest rate swap contracts that meet the criteria for hedge accounting as provided in the "Accounting Standard for Financial Instruments" are accounted for using deferral hedge accounting, which requires unrealized gain or loss to be deferred as net unrealized gain or loss on the contract as a component of net assets until the loss or gain related to the hedged item is actually recognized.

The Company and its consolidated subsidiaries enter into forward foreign exchange contracts and interest rate swap contracts to hedge the risk of exchange rate fluctuations in forecasted foreign currency transactions and fluctuations in interest rates on borrowings, respectively. For forecasted foreign currency transactions, the suitability for hedging is confirmed by pretesting and post-testing with consideration for whether the transaction is highly likely to be executed. The Company and its consolidated subsidiaries use derivative transactions solely for the purpose of managing risks and not for speculation. The counterparties are major financial institutions, therefore, the Company and its consolidated subsidiaries consider the credit risk to be minimal. The derivative transactions are entered into by each company in accordance with accounting policies and decisions made by each company's management.

**(r) Goodwill**

Goodwill is amortized by the straight-line method over the period it is expected to have an effect.

**(s) Reclassification and restatement**

The Company and its consolidated subsidiaries have applied the "Partial Amendments to Accounting Standard for Tax Effect Accounting" (Accounting Standards Board of Japan (ASBJ) Statement No. 28, February 16, 2018) ("Partial Amendments") from the beginning of the fiscal year ended December 31, 2019. Accordingly, deferred tax assets and deferred tax liabilities are presented under investments and other assets and under long-term liabilities, respectively, and the notes related to tax effect accounting have been changed.

As a result, "Deferred tax assets" of ¥4,889 million presented under "Current assets" in the consolidated balance sheet as of December 31, 2018 has been included in "Deferred tax assets" of ¥6,476 million under "Investments and other assets" and "Deferred tax assets" of ¥255 million presented under "Current assets" in the consolidated balance sheet as of December 31, 2018 has been included in "Deferred tax liabilities" of ¥2,351 million under "Long-term liabilities."

Also, the notes related to tax effect accounting additionally included those described in Note 8 (excluding

total amount of valuation allowance) and Note 9 of "Accounting Standard for Tax Effect Accounting," which are required in Paragraphs 3 to 5 of the Partial Amendments. However, this additional information corresponding to the year ended December 31, 2018 is not disclosed, in accordance with the transitional treatments prescribed in Paragraph 7 of the Partial Amendments.

Certain prior period amounts have been reclassified to conform to the current year presentation. These reclassifications had no impact on the previously reported results of operations or retained earnings.

### 3. Changes in accounting policies

#### Adoption of leases (IFRS 16-Leases)

The overseas consolidated subsidiaries, excluding those in the U.S. applied IFRS 16-Leases from the beginning of the

fiscal year ended December 31, 2019. In accordance with the transition measures of IFRS 16, the subsidiaries recognized the cumulative impact of IFRS 16 at the beginning of the fiscal year ended December 31, 2019. They also recognized assets and liabilities related to lease contracts which had been previously accounted for as operating leases as a lessee in accordance with International Accounting Standards ("IAS") 17.

According to this adoption, "Machinery and equipment" under "Property, plant and equipment" increased by ¥1,108 million (\$10,073 thousand), "Other current liabilities" under "Current liabilities" increased by ¥455 million (\$4,136 thousand) and "Other long-term liabilities" under "Long-term liabilities" increased by ¥793 million (\$7,209 thousand) as of December 31, 2019.

The effect of these changes on consolidated statements of operations was immaterial.

### 4. Accounting standards for presentation of comprehensive income

The components of other comprehensive income for the fiscal years ended December 31, 2018 and 2019 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
<b>Valuation difference on available-for-sale securities</b>			
Increase (decrease) during the year	¥ (13,312)	¥ 2,447	\$ 22,245
Reclassification adjustments	(1,857)	(15)	(136)
Subtotal, before tax	(15,169)	2,432	22,109
Tax (expense) benefit	4,527	(766)	(6,964)
Subtotal, net of tax	(10,642)	1,666	15,145
<b>Deferred gains (losses) on hedges</b>			
Increase during the year	250	195	1,773
Reclassification adjustments	196	(202)	(1,836)
Subtotal, before tax	446	(7)	(63)
Tax (expense) benefit	(128)	(54)	(491)
Subtotal, net of tax	318	(61)	(554)
<b>Foreign currency translation adjustments</b>			
Decrease during the year	(6,846)	(2,647)	(24,064)
<b>Remeasurements of defined benefit plans</b>			
Decrease during the year	(16)	-	-
Reclassification adjustments	(446)	-	-
Subtotal, before tax	(462)	-	-
Tax (expense) benefit	115	-	-
Subtotal, net of tax	(347)	-	-
<b>Share of other comprehensive income of associates accounted for using equity method</b>			
Decrease during the year	(135)	(73)	(663)
<b>Total other comprehensive income (loss)</b>	¥ (17,652)	¥ (1,115)	\$ (10,136)

## 5. Financial instruments

### (a) Status of financial instruments

#### (1) Policy on financial instruments

As a Group policy, the Company and its consolidated subsidiaries restrict investments of surplus cash, if any, to safe financial assets such as bank deposits. Funds required by the Company are obtained mainly through bank borrowings and the issuance of bonds. Derivatives are used to avoid the risks described below and are not entered into for speculative purposes.

#### (2) Details of financial instruments, associated risks and risk management structure

Notes and accounts receivable – trade, which are operating receivables, are exposed to customer credit risk. The Company, pursuant to the Company's Credit Control Regulations, manages credit risk by managing relative due dates and outstanding balances of each counterparty and by monitoring the credit status of major counterparties. Consolidated subsidiaries perform similar procedures in conformity with the Company's Credit Control Regulations.

Operating receivables denominated in foreign currencies, which arise from the Company's global business development, are exposed to foreign exchange fluctuation risk. The Group enters into forward foreign exchange contracts mainly for accounts receivable associated with export transactions of finished goods to manage fluctuation in future foreign exchange rates.

Investment securities consist mainly of equity securities of companies with which companies in the Group have business relationships and are exposed to market price fluctuation risk. The Company, pursuant to the Company's Shareholdings Regulations, monitors the fair values of such securities and regularly reviews its holdings.

Notes and accounts payable – trade, which are operating debt, are settled within one year.

Regarding borrowings, short-term debt is issued mainly to obtain funds for operating transactions, and bonds and long-term debt are issued mainly for capital expenditures. Some borrowings have floating interest rates and are exposed to interest rate fluctuation risk against which long-term debt is partially hedged through interest rate swap contracts.

For details regarding hedge accounting of derivatives such as hedging instruments and hedged items and hedging policy, refer to Note 2 (q), "Significant accounting policies – Derivatives and hedge accounting."

Matters regarding derivative transactions are determined by executives in charge of accounting at each consolidated Group company in accordance with the regulations of each company. Approval for transactions that exceed a certain scope is granted by the Company's management committee. Operations and management pertaining to the execution of derivative transactions are carried out by each company's accounting department, and such operations are managed through a check and balance system. With derivative transactions, the Company enters into contracts only with financial institutions with high ratings to reduce credit risk.

Operating debt and borrowings are exposed to liquidity risks. The Group manages such risks by cash management forecasting at each Group company.

#### (3) Supplementary explanation for fair values of financial instruments

The notional amounts of derivatives in Note 7, "Derivatives," does not indicate the market risks pertaining to the derivatives themselves.

**(b) Fair values of financial instruments**

The tables below show the book values of financial instruments recorded in the consolidated balance sheet, their fair values and any differences between the book value and fair value as of December 31, 2018 and 2019. Financial instruments whose fair values were deemed to be extremely difficult to estimate were not included. (See in the notes to the tables below – Note 3, “Financial instruments whose fair values are deemed to be extremely difficult to estimate.”)

Millions of yen			
2018/12	Book value	Fair value	Difference
(1) Cash and time deposits	¥ 116,786	¥ 116,786	¥ -
(2) Notes and accounts receivable – trade	56,796	56,796	-
(3) Investment securities:			
Other securities	46,413	46,413	-
(4) Short-term debt:			
Short-term debt	(23,585)	(23,585)	-
Current portion of long-term debt	(11,766)	(11,766)	(0)
Current portion of unsecured bonds	(10,000)	(10,024)	(24)
(5) Notes and accounts payable – trade	(38,774)	(38,774)	-
(6) Long-term debt:			
Unsecured bonds	(20,000)	(20,175)	(175)
Long-term borrowings	(46,654)	(46,705)	(51)
(7) Derivatives			
Derivatives not accounted for with hedge accounting	(102)	(102)	-
Derivatives accounted for with hedge accounting	68	68	-

Millions of yen			
2019/12	Book value	Fair value	Difference
(1) Cash and time deposits	¥ 101,509	¥ 101,509	¥ -
(2) Notes and accounts receivable – trade	52,716	52,716	-
(3) Investment securities:			
Other securities	49,035	49,035	-
(4) Short-term debt:			
Short-term debt	(22,818)	(22,818)	-
Current portion of long-term debt	(3,057)	(3,084)	(27)
Current portion of unsecured bonds	(10,000)	(10,016)	(16)
(5) Notes and accounts payable – trade	(34,893)	(34,893)	-
(6) Long-term debt:			
Unsecured bonds	(20,000)	(20,057)	(57)
Long-term borrowings	(44,604)	(44,670)	(66)
(7) Derivatives			
Derivatives accounted for with hedge accounting	458	458	-

Thousands of U.S. dollars			
2019/12	Book value	Fair value	Difference
(1) Cash and time deposits	\$ 922,810	\$ 922,810	\$ -
(2) Notes and accounts receivable – trade	479,236	479,236	-
(3) Investment securities:			
Other securities	445,773	445,773	-
(4) Short-term debt:			
Short-term debt	(207,436)	(207,436)	-
Current portion of long-term debt	(27,791)	(28,036)	(245)
Current portion of unsecured bonds	(90,909)	(91,055)	(146)
(5) Notes and accounts payable – trade	(317,209)	(317,209)	-
(6) Long-term debt:			
Unsecured bonds	(181,818)	(182,336)	(518)
Long-term borrowings	(405,491)	(406,091)	(600)
(7) Derivatives			
Derivatives accounted for with hedge accounting	4,163	4,163	-

Notes: Fair value measurements of financial instruments and matters regarding marketable securities and derivatives

1. Amounts for “Book value” and “Fair value” in parentheses indicate net liabilities.
2. Measurements of fair value for financial instruments and matters regarding marketable securities and derivatives

**(1) Cash and time deposits and (2) Notes and accounts receivable – trade**

The fair value of these items approximates the book value because of their short-term nature. Thus, the book value is used as the fair value.

**(3) Investment securities**

The fair value of equity securities is based on market prices on public exchanges.

For information on investment securities, refer to Note 6, “Marketable and investment securities.”

**(4) Short-term debt and (5) Notes and accounts payable – trade**

The fair value of these items, excluding the current portion of long-term debt and unsecured bonds, approximates the book value because of their short-term nature. Thus, the book value is used as the fair value. The current portion of long-term debt and unsecured bonds, which are included in short-term debt, is measured by the methods used in “(6) Long-term debt” below and classified as such.

**(6) Long-term debt**

The fair value of unsecured bonds issued by the Company is based on the market price if available and the present value calculated by discounting the total amount of principle and interest outstanding at an appropriate rate considering the time to maturity and the credit risk if the market price is not available.

The fair value of long-term borrowings is measured by discounting the total amount of principle and interest outstanding at an estimated interest rate for similar new borrowings.

**(7) Derivatives**

Refer to Note 7, “Derivatives.”

3. Financial instruments whose fair values are deemed to be extremely difficult to estimate

Equity securities issued by affiliates, investments in capital of subsidiaries and associates and nonlisted equity securities are not included in “(3) Investment securities” because their fair values were deemed extremely difficult to estimate, they had no quoted market prices and it was not possible to estimate their future cash flows. For information related to these securities, refer to Note 6, “Marketable and investment securities.”

**6. Marketable and investment securities**

**(a) Acquisition cost and book value of securities with observable market values at December 31, 2018 and 2019 were as follows:**

2018/12	Millions of yen		
	Acquisition cost	Book value	Difference
Available-for-sale securities:			
Securities with book value exceeding acquisition cost:			
Equity securities	¥ 19,165	¥ 45,590	¥ 26,425
Securities with book value not exceeding acquisition cost:			
Equity securities	936	823	(113)
	¥ 20,101	¥ 46,413	¥ 26,312

2019/12	Millions of yen		
	Acquisition cost	Book value	Difference
Available-for-sale securities:			
Securities with book value exceeding acquisition cost:			
Equity securities	¥ 19,190	¥ 48,000	¥ 28,810
Securities with book value not exceeding acquisition cost:			
Equity securities	1,101	1,035	(66)
	¥ 20,291	¥ 49,035	¥ 28,744

2019/12	Thousands of U.S. dollars		
	Acquisition cost	Book value	Difference
Available-for-sale securities:			
Securities with book value exceeding acquisition cost:			
Equity securities	\$ 174,455	\$ 436,364	\$ 261,909
Securities with book value not exceeding acquisition cost:			
Equity securities	10,009	9,409	(600)
	\$ 184,464	\$ 445,773	\$ 261,309

**(b) Book values of securities with no available market values at December 31, 2018 and 2019 were as follows:**

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Available-for-sale securities:			
Equity securities issued by affiliates	¥ 1,684	¥ 1,684	\$ 15,309
Investments in capital of subsidiaries and associates	1,612	1,757	15,973
Nonlisted equity securities, other	2	2	18
	¥ 3,298	¥ 3,443	\$ 31,300

**(c) Sales of available-for-sale securities sold in the years ended December 31, 2018 and 2019 were as follows:**

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Total sales amounts	¥ 3,449	¥ 125	\$ 1,136
Gains on sales	1,942	15	136

**(d) Impairment loss on investment securities**

The Company recognized impairment loss of ¥85 million on investment securities for the fiscal year ended December 31, 2018. There was no impairment loss on investment securities for the fiscal year ended December 31, 2019.

If the fair market value as of the end of each financial quarter has dropped by more than 30% from the acquisition cost, all of the loss on impairment is recognized.

**7. Derivatives**

The fair values of derivative contracts used by the Company and its consolidated subsidiaries at December 31, 2018 and 2019 were as follows:

**(a) Derivative transactions not accounted for under hedge accounting**

Currency related transactions

2018/12		Millions of yen			
Classification	Type of transaction	Notional amount	Portion due after 1 year	Fair value	Unrealized gain (loss)
Nonmarket transactions	Forward foreign exchange				
	Buy	¥ 161	¥ -	¥ (3)	¥ (3)
	Currency swap	230	-	(99)	(99)
		¥ 391	¥ -	¥ (102)	¥ (102)

Note: Fair value is based on prices obtained from financial institutions.

There were no derivative transactions not accounted for under hedge accounting for the year ended December 31, 2019.

## (b) Derivative transactions to which hedge accounting has been applied

### Currency related transactions

2018/12

Millions of yen

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
Deferral hedge accounting	Forward foreign exchange				
	Sell	Forecasted transactions for accounts receivable denominated in foreign currencies	¥ 57,132	¥ 9,182	¥ 178
			¥ 57,132	¥ 9,182	¥ 178

2019/12

Millions of yen

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
Deferral hedge accounting	Forward foreign exchange				
	Sell	Forecasted transactions for accounts receivable denominated in foreign currencies	¥ 41,661	¥ 7,925	¥ 521
	Buy	Forecasted transactions for accounts payable denominated in foreign currencies	102	–	0
			¥ 41,763	¥ 7,925	¥ 521

2019/12

Thousands of U.S. dollars

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
Deferral hedge accounting	Forward foreign exchange				
	Sell	Forecasted transactions for accounts receivable denominated in foreign currencies	\$ 378,736	\$ 72,045	\$ 4,736
	Buy	Forecasted transactions for accounts payable denominated in foreign currencies	928	–	0
			\$ 379,664	\$ 72,045	\$ 4,736

Note: Fair value is based on prices obtained from financial institutions.

### Interest related transactions

2018/12

Millions of yen

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
Deferral hedge accounting	Interest rate swap	Interest on borrowings	¥ 20,000	¥ 10,000	¥ (110)

2019/12

Millions of yen

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
Deferral hedge accounting	Interest rate swap	Interest on borrowings	¥ 10,000	¥ 10,000	¥ (63)

2019/12

Thousands of U.S. dollars

Method of hedge accounting	Type of transaction	Hedged item	Notional amount	Portion due after 1 year	Fair value
Deferral hedge accounting	Interest rate swap	Interest on borrowings	\$ 90,909	\$ 90,909	\$ (573)

Note: Fair value is based on prices obtained from financial institutions.

## 8. Cash and cash equivalents

Cash and cash equivalents at December 31, 2018 and 2019 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Cash and time deposits on consolidated balance sheets	¥ 116,786	¥ 101,509	\$ 922,810
Time deposits due over three months	(537)	(532)	(4,837)
Cash and cash equivalents in consolidated statements of cash flows	¥ 116,249	¥ 100,977	\$ 917,973

## 9. Inventories

Inventories at December 31, 2018 and 2019 consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Finished and purchased goods	¥ 40,498	¥ 52,552	\$ 477,745
Work-in-process	1,583	3,139	28,536
Raw materials and others	26,035	26,296	239,055
	¥ 68,116	¥ 81,987	\$ 745,336

## 10. Loss on impairment

There was no materiality for loss on impairment for the fiscal year ended December 31, 2018. Loss on impairment for the fiscal year ended December 31, 2019 is summarized below.

### (a) Grouping

The Company and its consolidated subsidiaries group operating assets by business unit for which the profit or loss is continually controlled to measure the impairment of the assets. Idle assets which are not used for business are treated separately.

Loss on impairment for the asset groups for the fiscal year ended December 31, 2019 was as follows.

Use	Location	Type	Loss on impairment	
			Millions of yen	Thousands of U.S. dollars
			2019/12	2019/12
		Goodwill	¥ 15,475	\$ 140,682
	Electric Glass Fiber America, LLC	Trademarks	1,695	15,409
		Other	2,693	24,482
		Subtotal	19,863	180,573
		Construction in progress	5,005	45,500
Business assets for glass fiber	Electric Glass Fiber NL, B.V.	Machinery and equipment	1,203	10,936
		Other	1,879	17,082
		Subtotal	8,087	73,518
		Machinery and equipment	2,865	26,045
	Electric Glass Fiber UK, Ltd.	Building and structures	1,484	13,491
		Other	2,087	18,973
		Subtotal	6,436	58,509
Significant idle assets	Notogawa factory, Shiga-Takatsuki factory, SGS Engineering Co., Ltd., other	Land	256	2,327
		Machinery and equipment	97	882
		Other	36	327
		Subtotal	389	3,536
Total			¥ 34,775	\$ 316,136

## (b) Other information on the assets

### (1) Business assets for glass fiber

#### 1. Reason to recognize impairment

Since the second half of 2018, market competition has intensified due mainly to weak demand in Europe and China. Due to circumstances in which the market recovery has been more gradual than expected, the subsidiaries in the U.S. and Europe glass fiber business have not been able to supplement the reduction of sales and increased costs from operational adjustments through internal efforts, and the stagnation of profit continues.

As a result, the book values of the assets were written down to their recoverable amounts.

#### 2. Assessment of recoverable values

The recoverable values of business assets for the glass fiber business were based on the value in use or net selling price. The value in use was calculated by discounting the future cash flows to be derived from the assets to the present value. The discount rates used for calculating the value in use were 7.5% (after tax) and 8.9% (before tax). Net selling price was measured reasonably by market value.

### (2) Significant idle assets

#### 1. Reason to recognize impairment

Since there was no plan to use the certain idle assets, the book values of the assets were written down to their recoverable amounts.

#### 2. Assessment of recoverable values

The recoverable values of significant idle assets were based on net selling price.

No recoverable values were expected for the production facilities of the glass manufacturing line due to the low probability of future sales.

The recoverable values of land were the price measured reasonably based on the roadside land prices by the outside expert.

## 11. Short-term and long-term debt

Short-term debt, including the current portion of long-term debt, at December 31, 2018 and 2019 consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Short-term bank borrowings, average rate 0.8% per annum	¥ 21,585	¥ 20,818	\$ 189,254
Commercial paper, average rate -0.0% per annum	2,000	2,000	18,182
Current portion of long-term borrowings, average rate 0.9% per annum	11,766	3,057	27,791
Current portion of unsecured bonds, average rate 0.3% per annum	10,000	10,000	90,909
	¥ 45,351	¥ 35,875	\$ 326,136

Average interest rate is the weighted average interest rate for amounts outstanding as of the fiscal year end.

Long-term debt at December 31, 2018 and 2019 consisted of the following:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Borrowings, principally from banks and insurance companies due from 2020 through 2024, average rate 0.3% per annum	¥ 58,420	¥ 47,661	\$ 433,282
0.7% unsecured bonds, due in 2019	10,000	–	–
0.3% unsecured bonds, due in 2020	10,000	10,000	90,909
0.6% unsecured bonds, due in 2022	10,000	10,000	90,909
0.3% unsecured bonds, due in 2026	–	10,000	90,909
	88,420	77,661	706,009
Less current portion of long-term borrowings	(11,766)	(3,057)	(27,791)
Less current portion of unsecured bonds	(10,000)	(10,000)	(90,909)
	¥ 66,654	¥ 64,604	\$ 587,309

The aggregate annual maturities of long-term debt at December 31, 2019 were as follows:

Years ending December 31	Millions of yen	Thousands of U.S. dollars
2020	¥ 13,057	\$ 118,700
2021	26,258	238,709
2022	13,057	118,700
2023	13,157	119,609
2024	2,132	19,382
2025 and thereafter	10,000	90,909
	¥ 77,661	\$ 706,009

For flexible financing purposes, the Company has committed credit facilities with certain banks. The maximum aggregate credit facility available to the Company is ¥25,000 million (\$227,273 thousand). The credit facility has not been used as of December 31, 2019.

## 12. Income taxes

The Company is subject to a number of taxes based on income, which, in the aggregate, indicate a statutory tax rate in Japan of approximately 30.7% and 30.5% for the fiscal years ended December 31, 2018 and 2019, respectively.

The significant differences between the statutory tax rate in Japan and the effective tax rate of the Company and its consolidated subsidiaries for financial statement purposes for the fiscal year ended December 31, 2018 were as follows:

	2018/12	2019/12
Statutory tax rate in Japan	30.7%	–%
Nontaxable dividend income	(18.0)	–
Difference in tax rates for overseas consolidated subsidiaries	(1.9)	–
Permanent difference	1.3	–
Undistributed earnings of overseas consolidated subsidiaries	(2.7)	–
Effect of elimination of dividend income	18.2	–
Changes in statutory tax rates on the Company and its consolidated subsidiaries	(0.3)	–
Overseas withholding tax	2.4	–
Effect of elimination of unrealized gains	(0.3)	–
Movement of valuation allowance	8.2	–
Other	0.7	–
Effective tax rate	38.3%	–%

The details of the differences between the statutory tax rate and effective tax rate for the year ended December 31, 2019 were omitted because the Company recorded a loss before income taxes for the year.

Significant components of the Company's and its consolidated subsidiaries' deferred tax assets and liabilities as of December 31, 2018 and 2019 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
<b>Deferred tax assets:</b>			
Tax losses carried forward	¥ 2,882	¥ 6,461	\$ 58,736
Depreciation in excess of tax limit	3,512	5,905	53,682
Goodwill	413	4,655	42,318
Reserve for special repairs	5,421	3,620	32,909
Loss on devaluation of inventories	2,443	2,441	22,191
Unrealized gain on property, plant and equipment	2,831	2,356	21,418
Capital allowances	2,546	2,308	20,982
Loss on valuation of investment securities	1,237	1,237	11,245
Accrued bonuses	365	374	3,400
Reserve for loss on plant closing	629	319	2,900
Long-term prepaid expenses	171	103	936
Other	3,240	3,343	30,392
Subtotal deferred tax assets	25,690	33,122	301,109
Valuation allowance for tax losses carried forward	-	(5,396)	(49,055)
Valuation allowance for deductible temporary differences	-	(18,798)	(170,890)
Total valuation allowance	(6,870)	(24,194)	(219,945)
Total deferred tax assets	18,820	8,928	81,164
<b>Deferred tax liabilities:</b>			
Valuation difference on available-for-sale securities	(6,830)	(7,596)	(69,054)
Depreciation of overseas consolidated subsidiaries	(5,818)	(6,156)	(55,964)
Undistributed profit of subsidiaries	(1,701)	(2,585)	(23,500)
Other	(346)	(551)	(5,009)
Total deferred tax liabilities	(14,695)	(16,888)	(153,527)
Net deferred tax assets (liabilities)	¥ 4,125	¥ (7,960)	\$ (72,363)

- Notes: 1. The variance in the valuation allowance is due mainly to the increase in the valuation allowance related to tax losses carried forward and goodwill.  
2. Tax losses carried forward and their deferred tax assets by expiration period as of December 31, 2019 were as follows:

	Millions of yen		
	Tax losses carried forward	Valuation allowance for tax losses carried forward	Deferred tax assets
2020	¥ -	¥ -	¥ -
2021	187	(123)	64
2022	-	-	-
2023	13	-	13
2024	289	(289)	-
2025 and thereafter	5,972	(4,984)	988
Total	¥ 6,461	¥ (5,396)	¥ 1,065

	Thousands of U.S. dollars		
	Tax losses carried forward	Valuation allowance for tax losses carried forward	Deferred tax assets
2020	\$ -	\$ -	\$ -
2021	1,700	(1,118)	582
2022	-	-	-
2023	118	-	118
2024	2,627	(2,627)	-
2025 and thereafter	54,291	(45,310)	8,981
Total	\$ 58,736	\$ (49,055)	\$ 9,681

The amount of tax losses carried forward in the above table is after multiplying by the statutory tax rate.

### 13. Asset retirement obligations

#### (a) Asset retirement obligations recorded on the consolidated balance sheets

(1) Outline of asset retirement obligations

Recorded asset retirement obligations are expenses such as the costs for the disposal of machinery and equipment owned by the Company that contain PCB (polychlorinated biphenyl) and the costs for the removal of asbestos from buildings owned by the Company when they are demolished.

(2) Basis for calculating asset retirement obligations

Asset retirement obligations are based on estimates provided by specialty companies such as construction companies.

(3) Changes in the total amount of asset retirement obligations during the fiscal years ended December 31, 2018 and 2019 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Beginning balance	¥ 306	¥ 286	\$ 2,600
Decrease due to the fulfillment of asset retirement obligations	(10)	(10)	(91)
Change in estimated asset retirement obligations	(15)	1	9
Other	5	-	-
Ending balance	¥ 286	¥ 277	\$ 2,518

#### (b) Asset retirement obligations not recorded on the consolidated balance sheets

Regarding some factory sites and other properties used under real estate leasing agreements, the Company and its consolidated subsidiaries have obligations related to the cost of restoring such properties to their original state at the time of business termination or moving out. However, since there are uncertainties regarding the lease periods of the properties to which such obligations apply because there are no plans to terminate or move out at this time, it is impossible to reasonably estimate the related asset retirement obligations. Therefore, no asset retirement obligations are recorded in connection with such obligations.

### 14. Severance and retirement benefits

The Company and its domestic consolidated subsidiaries provide mainly defined contribution pension plans. However, certain employees are provided unfunded lump-sum payment plans. The overseas consolidated subsidiaries provide funded lump-sum payment plans, defined contribution pension plans and defined benefit pension plans. Furthermore, some overseas consolidated subsidiaries revised their retirement benefit plans. Following the change, gain on revision of retirement benefit plan was recorded in the amount of ¥966 million as other income for the fiscal year ended December 31, 2018. The effect of the revision of retirement benefit plans was immaterial for the fiscal year ended December 31, 2019.

Under defined benefit pension plans, the reconciliation of opening and ending balances for projected benefit obligation for the fiscal years ended December 31, 2018 and 2019 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Projected benefit obligation at beginning of year	¥ (37,811)	¥ (1,690)	\$ (15,364)
Service cost	(651)	(231)	(2,100)
Interest cost	(504)	(34)	(309)
Actuarial differences	(138)	(4)	(36)
Benefits paid	152	150	1,364
Decrease from revision of retirement benefit plans	35,940	784	7,127
Other	1,322	58	527
Projected benefit obligation at end of year	¥ (1,690)	¥ (967)	\$ (8,791)

Under defined benefit pension plans, the reconciliation of opening and ending balances for pension assets for the fiscal years ended December 31, 2018 and 2019 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Pension assets at beginning of year	¥ 35,910	¥ 24	\$ 218
Expected return on pension assets	468	0	0
Actuarial differences	1	1	9
Contributions paid by employer	268	2	19
Decrease from revision of retirement benefit plan	(35,391)	-	-
Other	(1,232)	0	0
Pension assets at end of year	¥ 24	¥ 27	\$ 246

Under defined benefit pension plans, the reconciliation of ending balances for projected benefit obligations and pension assets and the balances for net defined benefit liability recognized in the consolidated balance sheets for the fiscal years ended December 31, 2018 and 2019 was as follows:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Projected benefit obligations of funded plans	¥ (616)	¥ (663)	\$ (6,028)
Pension assets	24	27	246
	(592)	(636)	(5,782)
Projected benefit obligation of unfunded plans	(1,074)	(304)	(2,763)
Net liabilities for severance and retirement benefits recognized in the consolidated balance sheets	(1,666)	(940)	(8,545)
Net defined benefit liability	(1,666)	(940)	(8,545)
Net liabilities for severance and retirement benefits recognized in the consolidated balance sheets	¥ (1,666)	¥ (940)	\$ (8,545)

Under defined benefit pension plans, components of severance and retirement benefit expense for the fiscal years ended December 31, 2018 and 2019 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Service cost	¥ 651	¥ 231	\$ 2,100
Interest cost	504	34	309
Expected return on pension assets	(468)	(0)	(0)
Amortization of actuarial differences	107	3	27
Other	–	4	37
Severance and retirement benefit expense for defined benefit pension plans	794	272	2,473
Gain on revision of retirement benefit plan	¥ (966)	¥ –	\$ –

Under defined benefit pension plans, remeasurements of defined benefit plans for the fiscal years ended December 31, 2018 and 2019 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Actuarial differences	¥ (462)	¥ –	\$ –
Total	¥ (462)	¥ –	\$ –

Under defined benefit pension plans, the percentage composition by asset class of total plan assets for the fiscal years ended December 31, 2018 and 2019 was as follows:

	2018/12	2019/12
Equity securities	51%	45%
Bonds	11%	11%
Others	38%	44%
Total	100%	100%

The current and expected allocation of plan assets as well as the current and expected long-term rates of return for the various assets that constitute the plan assets are considered when determining the long-term expected rate of return on plan assets.

Under defined benefit pension plans, principal actuarial assumptions for the fiscal years ended December 31, 2018 and 2019 were as follows:

	2018/12	2019/12
Discount rates (mainly)	1.0 – 3.3%	0.8 – 4.5%
Long-term expected rates of return on plan assets	1.0%	1.0%
Expected rates of pay raises (mainly)	2.0 – 4.0%	2.0 – 5.0%

The total amounts that the Company and its consolidated subsidiaries needed to contribute to the defined contribution pension plans were ¥1,633 million and ¥1,788 million (\$16,255 thousand) for the fiscal years ended December 31, 2018 and 2019, respectively.

## 15. Net assets

Under Japanese laws and regulations, the entire amount paid for new shares is required to be designated as common shares. However, a company may, by a resolution of the Board of Directors, designate an amount not exceeding one half of the price of the new shares as additional paid-in capital, which is included in capital surplus.

Under The Japanese Corporate Law (“the Law”), in cases in which a dividend distribution of surplus takes place, the smaller of an amount equal to 10% of the dividend or the excess, if any, of 25% of common shares over the total of additional paid-in capital and legal earnings reserve must be set aside as additional paid-in capital or legal earnings reserve. The legal earnings reserve is included in retained earnings in the accompanying consolidated balance sheets. Under the Law, both of these appropriations generally require a resolution of the shareholders’ meeting.

Additional paid-in capital and legal earnings reserve may not be distributed as dividends. Under the Law, all additional paid-in capital and all legal earnings reserve may be transferred to other capital surplus and retained earnings, which are potentially available for dividends, by a resolution of a shareholders’ meeting.

The maximum amount that the Company can distribute as dividends is calculated based on the nonconsolidated financial statements of the Company in accordance with Japanese laws and regulations.

The Company purchased treasury stock of 2,864,100 shares based on the resolution of the Board of Directors held on July 30, 2018.

At the annual shareholders’ meeting held on March 27, 2020, the shareholders approved cash dividends amounting to ¥4,830 million (\$43,909 thousand), or ¥50.00 per share. In addition, the Company paid interim cash dividends of ¥4,830 million (\$43,909 thousand), or ¥50.00 per share, on August 30, 2019.

## 16. Assets pledged as collateral and associated liabilities

Assets pledged as collateral and the associated liabilities at December 31, 2018 and 2019 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Assets pledged as collateral:			
Time deposits	¥ 306	¥ 296	\$ 2,691
Liabilities associated with assets pledged as collateral:			
Guarantee of liability	276	259	2,355

## 17. Contingent liabilities

Contingent liabilities at December 31, 2018 and 2019 were as follows:

	Millions of yen		Thousands of U.S. dollars
	2018/12	2019/12	2019/12
Guarantees of employees’ housing loans	¥ 142	¥ 105	\$ 955
Guarantees of bank loans for affiliated company accounted for by the equity method	3,038	2,829	25,718

## 18. Segment information

Information by segment for the fiscal years ended December 31, 2018 and 2019 was as follows:

### (a) Segment information (by management approach)

#### Outline of reportable segment

The Company has adopted a business division system in which each business division develops a comprehensive strategy for the products it handles and conducts business activities based on such strategy. The Board of Directors periodically reviews decisions regarding the allocation of management resources to each business division and evaluates business performance.

Although the Group may be considered to consist of multiple business segments that are handled by various business divisions, in general the “glass products” made by the Group companies are similar in terms of product characteristics, manufacturing methods, market and industry, customer type and marketing factors. Therefore, the Group has consolidated these segments into a single “Glass Business” segment. Accordingly, except for information given in the “Outline of reportable segment,” information for other segments has been omitted.

**(b) Related information**  
**(1) Information by products and services**

2018/12		Millions of yen	
Sales to external customers	Glass Business		Total
	Electronics and Information Technology	Performance Materials and Others	
	¥ 152,226	¥ 148,101	¥ 300,327

2019/12		Millions of yen	
Sales to external customers	Glass Business		Total
	Electronics and Information Technology	Performance Materials and Others	
	¥ 134,303	¥ 122,887	¥ 257,190

2019/12		Thousands of U.S. dollars	
Sales to external customers	Glass Business		Total
	Electronics and Information Technology	Performance Materials and Others	
	\$ 1,220,936	\$ 1,117,155	\$ 2,338,091

**(2) Geographical information**

Net sales

2018/12		Millions of yen				
Japan	China	South Korea	U.S.	Europe	Other areas	Total
¥ 49,690	¥ 72,456	¥ 53,792	¥ 45,899	¥ 41,760	¥ 36,730	¥ 300,327

2019/12		Millions of yen				
Japan	China	South Korea	U.S.	Europe	Other areas	Total
¥ 42,373	¥ 69,525	¥ 44,921	¥ 38,404	¥ 30,713	¥ 31,254	¥ 257,190

2019/12		Thousands of U.S. dollars				
Japan	China	South Korea	U.S.	Europe	Other areas	Total
\$ 385,209	\$ 632,045	\$ 408,373	\$ 349,127	\$ 279,209	\$ 284,128	\$ 2,338,091

Notes: 1. The classifications of countries and areas are based on the location of customers.  
2. The main country classified as "Other areas" is Taiwan.

Property, plant and equipment

2018/12		Millions of yen			
Japan	China	South Korea	Malaysia	Other areas	Total
¥ 189,771	¥ 64,922	¥ 46,291	¥ 40,757	¥ 44,800	¥ 386,541

2019/12		Millions of yen			
Japan	China	South Korea	Malaysia	Other areas	Total
¥ 190,018	¥ 56,572	¥ 43,373	¥ 38,062	¥ 30,657	¥ 358,682

2019/12		Thousands of U.S. dollars			
Japan	China	South Korea	Malaysia	Other areas	Total
\$ 1,727,436	\$ 514,291	\$ 394,300	\$ 346,018	\$ 278,700	\$ 3,260,745

Notes: 1. The classifications of countries and areas are based on the location of property, plant and equipment.  
2. The main countries classified as "Other areas" are countries in U.S. and Europe.

**(3) Information by major customers**

Sales

	Millions of yen		Thousands of U.S. dollars	Related segment
	2018/12	2019/12	2019/12	
LG Display Co., Ltd.	¥ 42,576	¥ 37,059	\$ 336,900	Glass Business

**(c) Information on impairment**

There was no materiality to the loss on impairment for the fiscal year ended December 31, 2018.

Millions of yen		
2019/12:	Glass Business	Total
Loss on impairment	¥ 34,775	¥ 34,775

Thousands of U.S. dollars		
2019/12:	Glass Business	Total
Loss on impairment	\$ 316,136	\$ 316,136

**(d) Information on amortization of goodwill and unamortized balance**

Millions of yen		
2018/12	Glass Business	Total
Amortization of goodwill	¥ 2,205	¥ 2,205
Balance at end of year	19,073	19,073

Millions of yen		
2019/12	Glass Business	Total
Amortization of goodwill	¥ 2,211	¥ 2,211
Balance at end of year	-	-

Thousands of U.S. dollars		
2019/12	Glass Business	Total
Amortization of goodwill	\$ 20,100	\$ 20,100
Balance at end of year	-	-

Note: The Company recognized loss on impairment of goodwill of ¥16,586 million (\$150,782 thousand) for the fiscal year ended December 31, 2019.

**19. Significant subsequent events****Borrowing of Significant Funds**

Based on the resolution of the Board of Directors held on March 27, 2020, the Company executed the funding as summarized below.

- (1) Purpose for funding  
Bond redemption and operating capital
- (2) Lending institutions  
Sumitomo Mitsui Banking Corporation and 10 other banks
- (3) Loan amount  
¥15,000 million (\$136,364 thousand)
- (4) Interest rate  
Based on market interest rates and other
- (5) Date of borrowing  
March 31, 2020
- (6) Repayment due date  
March 31, 2025
- (7) Assets pledged as collateral or guarantee  
None



## Independent Auditor's Report

To the Board of Directors of Nippon Electric Glass Co., Ltd.:

We have audited the accompanying consolidated financial statements of Nippon Electric Glass Co., Ltd. and its consolidated subsidiaries, which comprise the consolidated balance sheets as at December 31, 2019 and 2018, and the consolidated statements of operations, statements of comprehensive income, statements of changes in net assets and statements of cash flows for the years then ended, and a summary of significant accounting policies and other explanatory information.

### **Management's Responsibility for the Consolidated Financial Statements**

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

### **Auditor's Responsibility**

Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in Japan. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, while the objective of the financial statement audit is not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

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

### **Opinion**

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of Nippon Electric Glass Co., Ltd. and its consolidated subsidiaries as at December 31, 2019 and 2018, and their financial performance and cash flows for the years then ended in accordance with accounting principles generally accepted in Japan.

### **Convenience Translation**

The U.S. dollar amounts in the accompanying consolidated financial statements with respect to the year ended December 31, 2019 are presented solely for convenience. Our audit also included the translation of yen amounts into U.S. dollar amounts and, in our opinion, such translation has been made on the basis described in Note 1 to the consolidated financial statements.

**KPMG AZSA LLC**

April 17, 2020  
Kyoto, Japan

KPMG AZSA LLC, a limited liability audit corporation incorporated under the Japanese Certified Public Accountants Law and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.

# Corporate Information

## Global Network



### Corporate Profile (as of December 31, 2019)

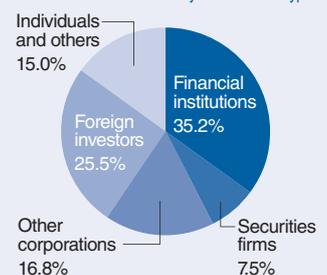
Founded	December 1, 1949
Company Name	Nippon Electric Glass Co., Ltd.
Head Office	7-1, Seiran 2-chome, Otsu, Shiga 520-8639, Japan Tel: +81-77-537-1700 Fax: +81-77-534-4967
Sales Headquarters (Osaka)	10F, Sumitomo Seimei Shin-Osaka Kita Bldg., 1-14, Miyahara 4-chome, Yodogawa-ku, Osaka 532-0003, Japan Tel: +81-6-6399-2711 Fax: +81-6-6399-2731
(Tokyo)	9F, Shinagawa Grand Central Tower, 16-4, Konan 2-chome, Minato-ku, Tokyo 108-0075, Japan Tel: +81-3-5460-2510 Fax: +81-3-5460-2525
Plants (in Japan)	Otsu, Shiga-Takatsuki, Notogawa, Precision Glass Center
Capital	32,155 million yen
Number of Employees	6,482 (consolidated)
Stock Exchange Listings	Tokyo Stock Exchange (1st Section)
Stock Code	5214
Fiscal Year	January 1 to December 31 of each year
General Shareholders Meeting	Held each year in March
Transfer Agent for Common Stock	Sumitomo Mitsui Trust Bank, Ltd.

### Stock Information (as of December 31, 2019)

#### Information about NEG Stock

Total number of shares authorized to be issued	240,000,000 shares
Total number of shares issued	99,523,246 shares
Shares per unit	100 shares
Total number of shareholders	15,458

#### Distribution of Shares by Shareholder Type



#### Major Shareholders

Shareholder	Number of shares held (thousands of shares)	Shareholding ratio (%)
NIPRO CORPORATION	12,580	13.0
The Master Trust Bank of Japan, Ltd. (Trust Account)	8,615	8.9
Japan Trustee Services Bank, Ltd. (Trust Account)	6,047	6.3
Japan Trustee Services Bank, Ltd. (Trust Account No. 9)	2,493	2.6
SMBC Nikko Securities Inc.	2,016	2.1
THE BANK OF NEW YORK MELLON 140051	1,717	1.8
Japan Trustee Services Bank, Ltd. (Trust Account No. 5)	1,627	1.7
The Shiga Bank, Ltd.	1,617	1.7
Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.	1,436	1.5
Trust & Custody Services Bank, Ltd. (Security Investment Trust Account)	1,343	1.4

Notes 1. NEG holds 2,904,626 shares of treasury stock but it is not included in the list of major shareholders.  
2. Shareholding ratio is calculated after deducting treasury stock.

GLASS FOR FUTURE



<https://www.neg.co.jp/en/>

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