

## SUSTAINABILITY REPORT 2016 MAKING A DIFFERENCE TO OUR WORLD THROUGH GLASS TECHNOLOGY

## WELCOME TO OUR SUSTAINABILITY REPORT 2016

The NSG Group is one of the world's largest manufacturers of glass and glazing products for the Architectural, Automotive and Technical Glass sectors. With around 27,000 permanent employees, we have principal operations in 29 countries and sales in over 100.



### **Our locations**

UK	Romania	Malaysia	Italy	Russia	Sweden	Netherlands
France	Hungary	Canada	Chile	China	Norway	Poland
Spain	Czech Republic	USA	India	Brazil	Denmark	Japan
Belgium	Austria	Mexico	Germany	Argentina	Finland	Vietnam

# CONTENTS



President and CEO's message	02
Approach to Sustainability	04
Targets	<b>08</b>
Approach to Reporting	09





Corporate Governance	18
Code of Ethics	19
Health and Safety	20





## ENVIRONMENT

Environmental Policies	22
Energy Usage	24
Air Emissions	26
Minimizing Waste	28

### **STAKEHOLDERS**

Customers	30
Shareholders	32
Employees	34
Communities	36
Suppliers	38

## PRESIDENT AND CEO'S MESSAGE



Our VA strategy underlines the contribution our products and services make to society and the environment." The challenges we face in managing the world's limited resources have shaped our vision to make a difference to our world through glass technology, and our commitment to the sustainable development of the NSG Group.

Glass production is an energy intensive process and yet the application of glass can offer society opportunities to mitigate climate change. Our businesses always endeavour to make a positive social and environmental contribution to the value chains in which we operate and we can only achieve our sustainability objectives by balancing the needs of all our stakeholders.

The new sustainability targets discussed in this report emphasize the long term strategic priorities for the NSG Group and the progress we have made towards their attainment. By managing the environmental impact of our activities, we are able to work in harmony with our communities and we will continue to challenge ourselves to improve our energy efficiency and resource management. This year we have continued to reduce our greenhouse gas emissions through improved utilization of our facilities and energy saving initiatives.

The health and safety of our employees, and of all our stakeholders, is fundamental to our business. The annual 'NSG Group Safety Day' clearly demonstrates our commitment to this principle and as members of the UN Global Compact we support the advancement of all its principles. Our Code of Ethics, a natural extension to the UN Global compact, provide practical guidance on how we should conduct ourselves in our day-to-day business.

Good corporate governance is a foundation for the sustainable development of the NSG Group. Our Corporate Governance Guidelines are defined to strengthen this purpose and to signify our support for the Principles of the Tokyo Stock Exchange Corporate Governance Code.

Working safely and ethically, we will continue to embed the principles of sustainability within the NSG Group and to make a positive contribution to our environment.

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**Shigeki Mori** Representative Executive Officer President and CEO



# The NSG Group offers a wide range of value added (VA) products and services across our Architectural, Automotive and Technical Glass businesses that can help mitigate climate change or improve safety.

## **VA Strategy**

Our Long-term Strategic Vision to transform ourselves into a VA Glass Company is to engage with our customers to develop new and innovative products for our markets, and offer a greater proportion of VA products and services. The Group is also working closely with our customers to deliver products and services that support their own sustainability objectives and reduce the environmental impact throughout the product lifecycle.

Our efforts are leading to significant and lasting contributions to energy conservation and to social and environmental sustainability. Good management of our people, our resources, our communities and our environment makes good business sense.



## Social and Environmental Benefits

## **APPROACH TO SUSTAINABILITY**



Risks associated with climate change are an opportunity for the NSG Group to make a positive contribution to our environment." Glass is playing an important role in society's efforts to reduce greenhouse gas emissions and to mitigate the effects of climate change. We aim to be the global leader in innovative high-performance glass and glazing solutions, contributing to energy conservation and generation, while working safely and ethically.

Our efficiency programs are continuing to deliver reductions in energy consumption, greenhouse gas emissions and waste production. We train and develop our people while respecting their human rights and keeping them safe from workplace injuries or occupational illness. We encourage our contractors and supply chain to take similar steps through the ongoing evaluation of our key suppliers' sustainability practices.

## **Outcome of Materiality Assessment**



Importance to business

Our sustainability agenda is integral to decreasing our costs and increasing our market opportunities. Over the past year, we have continued our efforts in areas such as energy reduction and waste recycling, both of which can have a significant and swift impact on the business performance of the Group. Glass markets are extremely competitive around the world and it is imperative that we can meet the ever-increasing demands of customers.

#### Shiro Kobayashi

Director of Sustainability

## SUSTAINABILITY STRATEGY



### Materiality

For the purposes of this Report, we consider material information to be that which is of greatest interest to, and which has the potential to affect the perception of, those stakeholders who wish to make informed decisions and judgments about the Company's commitment to environmental, social and economic progress. The NSG Group Sustainability Committee agreed on material issues based on the Group's key impacts and stakeholder feedback throughout the year. These material issues have been combined into our Sustainability Targets.

Financial issues are of the highest importance to stakeholders and are reported separately in our Annual Report. Financial health remains a critical issue to NSG and cost reductions are vital to our strategy and everyday activities.

Achievement of our medium-term management plan, MTP Phase 2, as described in pages 32 and 33 in this Report requires customer communication that improves our understanding of needs and concerns. We have developed a commercial leadership program to enhance the marketing and strategic skills of our commercial managers.

Other leadership and development programs are ongoing to minimize the risk of talent loss. Feedback from an employee engagement survey has led to improved learning and development plans and a healthy and motivated workforce.

People are the NSG Group's most important asset. The minimization of safety risks is important to all stakeholders and our management program is aimed at protecting the workforce.

Our reputation is integral to the success of the NSG Group. We are committed to demonstrating good corporate governance and ethical business practice to satisfy increasing shareholder and customer requirements. We will execute the MTP Phase 2 in line with the Long-term Strategic Vision within our Corporate Governance Guidelines announced in May 2015. Group policies on compliance and reporting of concerns have been updated to align with these guidelines. Our Code of Ethics relaunched in March 2015 reflects our dedication to doing business the right way whilst minimizing regulatory and reputational risk.

Operational energy use and associated  $CO_2$  emissions have a significant environmental impact combined with cost, security and regulatory risks. Operational efficiency has always been a key business concern but is now of particular interest to government, investors and customers.

Requirements from regulators and customers are providing opportunities for sustainable and innovative product design in a shift to value-added products. Supply chain risks and impacts, especially those related to the sustainability of raw material and the environmental and human rights performance of suppliers, are important for NSG and our customers. We assess key suppliers' sustainability practices to satisfy these concerns.

#### Our management approach

We work with local communities and governments to ensure compliance and forward thinking. We do this directly and through our membership of trade associations, standards bodies and other organizations. We also work to influence legislation, particularly in energy conservation and emission regulation.

Glass making is an energy-intensive process. Significant energy is consumed in obtaining and melting the raw materials for the manufacture of glass. Despite this necessary resource consumption, this energy can be quickly saved when our products are in use. Our products make a positive contribution to climate change efforts and to the quality of living and working environments.

We have communicated our Supplier Code of Conduct to our suppliers and have conducted evaluations to verify the declarations we have received.

Our products require raw materials that must be extracted from the earth. We take our responsibility to protect the natural habitats of the affected regions seriously.

Our Code of Ethics continues to reflect our values and principles, particularly the emphasis on safety, taking personal ownership for actions and communicating with openness and involvement. The Code ensures we carry out these activities in a safe, professional, legal and ethical manner, demonstrating corporate social responsibility and promoting sustainability. Wherever possible, the Code defines a fair and common sense approach to doing business, with some elements dictated by strict legal requirements.

Our Group policies and procedures detail the procedures everyone in the Group must follow to achieve sound governance, tight controls, risk management and adherence to legal, ethical and sustainable principles.

## **APPROACH TO SUSTAINABILITY**

#### Environmental

We take our environmental responsibilities extremely seriously. All our operations are required to meet legislative standards as a minimum. We conduct regular environmental audits to achieve continuous improvement.

Our Group Environmental Policy outlines our management of current activity and the legacy of past and inherited liability. It reinforces our commitment to using scientific principles to try to predict and assess our impacts on the environment.

We acknowledge that our activities affect the local and global environment but we take steps to minimize adverse effects, including implementing systems to manage such impacts in a controlled manner. Principal among these is our environmental management system, which is certified to ISO 14001 for the vast majority of our glass manufacturing and automotive manufacturing sites.

We are committed to reporting on our performance, both good and bad. Environmental data is collected under the broad headings of energy, emissions to air, water usage, recycling and waste. The data collected is based primarily on the core environmental performance indicator set of the Global Reporting Initiative (GRI). In addition, the Airsweb<sup>™</sup> system also incorporates an incident reporting system. The most senior executive with responsibility for environmental aspects is the Group Director of Sustainability.

#### Society

We believe we have a responsibility to be a good steward of the environment and a responsible corporate citizen. We work hard to minimize negative effects, such as pollution, noise and traffic. We operate programs to assess and manage the impacts of our operations on communities in entry, operational and exit stages. In addition to our business investments to sustain local operations, we also invest in the communities where we operate.

We aim to help charities and other projects through cash donations, or through other resources, to benefit the community or tackle specific social issues. We also encourage our people to develop community relationships. This can take the form of matching contributions raised by employees or enabling individuals to contribute their time and effort in local projects. The most senior position with responsibility for society aspects is the Group Director of Sustainability.

#### Human rights

Our Code of Ethics acknowledges internationally proclaimed human rights, which are also reflected in our employment policies and standards, providing all employees with reassurances on how they will be treated.

Our Equal Opportunity and Diversity Policy aims to prohibit discrimination based on race, color, creed, religion, age, gender, sexual orientation, national origin, disability, union membership, political affiliation or any other status protected by law, for all employment-related decisions.

The most senior executive with responsibility for human rights aspects is the Chief Human Resources Officer.

#### Product responsibility

We are committed to the safety of our products and to ensuring they can be easily handled, fitted and used by our customers. Our product risk-review procedures are designed to identify risks and provide advice to users on safe handling. We communicate risks on safety data sheets, labels and glazing and handling guidelines.

Every R&D project developing new products and processes is required to have an Environmental Impact Assessment completed to highlight any positive or potentially negative implications. We aim for a cradle-to-cradle life cycle management approach, incorporating environmental health and protection into every step of the life cycle of our products.

Our formal project management processes include thorough intellectual property searches, so our customers can be confident that new products and processes we develop can be used freely without fear of infringing third-party patents. The most senior executives accountable for product responsibility are the heads of the strategic business units (SBU).

### SUSTAINABILITY STRATEGY



#### Labor practice

Our management philosophy values people as the most important asset of our Group. Our HR strategy aims to ensure we have the right people and that we maximize our talent management around the world.

Safety and quality underpin everything we do, with open communication central to our employment policies.

We operate as an integrated international Group, with a multinational management and 80 percent of our employees working outside Japan. We reflect diversity in our workforce and believe that the range of nationalities, skills, qualifications and experience available in our many operations are a positive benefit to our business. Our management style is to put the best person in each job, regardless of nationality or region. To attract, motivate, develop and retain high-performing employees, our approach to rewards and retention includes market-based competitive pay and competitive benefit offerings for eligible employees.

We have identified specific challenges in attracting and retaining talent, particularly in emerging markets, and we are putting policies in place to address these. We work to create a culture that allows employees the opportunity to work without fear of intimidation, reprisal or harassment. We have systems in place to permit employees to raise any concerns in a confidential and timely manner. The most senior executive with responsibility for labor aspects is the Chief Human Resources Officer.

We value the health and safety of all our employees above all other considerations. Our safety programs emphasize the importance of appropriate safe behavior and of individuals taking personal responsibility.

We regard all injuries at work as unnecessary and avoidable. No matter how minor, each one must be reported and investigated. Details of our progress on safety performance are shown in the Health and Safety section of this Report.



#### NSG Safety and Environmental Awards 2016

The NSG Safety and Environmental Awards aim to ncrease awareness and reward individuals or teams for outstanding EHS project initiatives. Many of the best ideas for environmental, health and safety initiatives come from employees. These include ways of reducing health and safety risks, minimizing pollution, saving energy and reducing, recycling or reusing waste, water or raw materials. udging was undertaken by a panel of senior managers and EHS experts. Details of the 2016 winning projects can be seen on pages 21 and 23.



Our management philosophy values people as the most important asset of our Group. Our HR strategy aims to ensure we have the right people and we maximise our talent management around the world.

# TARGETS

Target	FY2018 targets	Progress made in FY2016
Safety	<ul> <li>Reduce Significant Injury Rate by 10 percent per year</li> <li>No fatality</li> </ul>	<ul> <li>The SIR at the end of FY2016 was 0.33 which represents a 6 percent improvement.</li> <li>There were no fatalities in the year. See page 20 for further details on the H&amp;S programme.</li> </ul>
Waste	<ul> <li>Reduce waste to landfill by 6kt (20 percent reduction on 2013)</li> </ul>	NSG successfully exceeded the 50 percent landfill waste reduction target by 2015 on a 2007 baseline in 2013. Our waste to landfill figure for 2015 was 23kt. This is a 14 percent reduction on 2014 and a 25 percent reduction on the 2013 baseline. See pages 28-29.
Energy and CO <sub>2</sub> reduction	<ul> <li>One percent year on year reduction in CO<sub>2</sub> intensity across glass manufacturing operations. This includes at least 70 percent of the NSG Group operational CO<sub>2</sub> emissions by FY2018</li> </ul>	In FY2016 we emitted 0.77 $tCO_2/t$ equivalent product. This represents a 1.5 percent improvement on FY2015. See pages 24 to 27.
Sustainable value added products	<ul> <li>Increase proportion of value-added products in total sales from approximately 1/3 to 1/2 in FY2020</li> <li>Demonstrate the added environmental or social benefit of products</li> </ul>	<ul> <li>There has been a steady increase in the VA ratio and it is now approximately 40 percent.</li> <li>Environmental and social benefits are demonstrated on pages 12 to 17.</li> </ul>
Responsible sourcing and transportation	<ul> <li>Continue our commitment to communicate the Supplier Code of Conduct to new suppliers and maintain the ongoing agreement of current suppliers</li> <li>Extend our program of supplier sustainability evaluation by 20 percent per year</li> <li>Continue to monitor suppliers that use materials with a potentially high environmental impact</li> <li>Work with supply chain partners to innovate our logistics arrangements to improve environmental impact of our products</li> </ul>	<ul> <li>60 percent of Key suppliers have now agreed to SCoC or can demonstrate their own equivalent code.</li> <li>14 percent improvement achieved in 2016</li> <li>We continue to make good progress and have improved our compliance in this area by ~8 percent in 2016</li> <li>There has been strong progress during 2016 with suppliers developing a number of projects around the Group which have reduced CO<sub>2</sub> emissions, some examples of which are reported in the Group Procurement Section of this report. See pages 27, 38-39 for further details</li> </ul>
Employees	<ul> <li>Commitment to continue to measure employee engagement. All areas to have 2014 Employee Survey action plans, aiming for 90 percent progress in each of these plans by the end of FY2016</li> <li>Continue with performance management initiatives to ensure that the appraisal process is maintained at the right standard. 100 percent of appraisal plan owners attend training to improve the discussion on employee development by the end of FY2016</li> <li>75 percent of employees to have either a collective or individual employee personal development plan by the end of FY2018</li> <li>Train 100 percent of commercial managers in the Commercial Leadership Program</li> </ul>	<ul> <li>150 action plans were created following the 2014 Global employee survey. At the end of FY2016 global progress was at 81 percent completion rate.</li> <li>At the end of FY2016 95 percent of plan owners had attended this training.</li> <li>88 percent of employees covered by the L&amp;D Process had either an individual or a collective plan.</li> <li>We achieved our milestone target of 50 percent of commercial managers trained by the end of FY2016</li> </ul>
Ethics and Compliance	<ul> <li>Relaunch Code of Ethics and maintain 100 percent completion of briefing and training</li> <li>Continue communication of relaunched Ethics &amp; Compliance Hotline and reporting of all concerns</li> <li>Identify, track and report meaningful Ethics &amp; Compliance KPI metrics</li> <li>Reissue Governance and Leadership Culture Assessment</li> </ul>	<ul> <li>75 percent completed by the end of March 2016</li> <li>Enhanced communication by offering a direct link from the Group Intranet homepage</li> <li>Agreed to change focus from completion metrics to leading indicators.</li> <li>Target was completed early in June 2016. HR Communications and ethics function to address areas of opportunity.</li> </ul>

## **APPROACH TO REPORTING**

This Report forms part of our non-financial performance communications and reflects Group, regional and site-level reporting. Unless otherwise stated, the Report covers those businesses over which the NSG Group has management control. Data relating to the environmental performance of Group operations covers 26 float and four rolled-glass sites. Joint venture sites where we do not have operational control are excluded. All Architectural, Automotive and Technical Glass downstream processing are also included in the reporting. Safety statistics shown cover our 'workforce' (employees and permanent contractors).

Our environmental and social performance is of interest to our stakeholders and important to our business success and we have been reporting on these matters since 2002, in successive environmental, social activity or CSR reports. We published our first Sustainability Report in 2009, when we decided to widen our reporting to cover all aspects of sustainability. In June 2009, we published our Group Sustainability Policy, setting our sustainability agenda, and in December 2009 established the Group Sustainability Committee to direct, coordinate and monitor our efforts to improve our approach to sustainability. In 2010, the Board of Directors agreed specific sustainability targets for the Group. New targets are shown on page 8 of this Report, along with an account of our progress towards them. In 2012, Shiro Kobayashi was appointed as the Group's Director of Sustainability. Clemens Miller, Chief Operating Officer, chairs the Sustainability Committee, which is leading our efforts to ensure that the principles of sustainable development are embedded in all of the Group's activities. We will continue to report on our progress in our 2017 Sustainability Report, which will be published in early 2018.

This Sustainability Report has been prepared using the the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines as a globally recognized framework for reporting on an organization's economic, social and environmental performance and responsiveness.



This is our **Communication on Progress** in implementing the principles of the **United Nations Global Compact** and supporting broader UN goals.

We welcome feedback on its contents.

## **BUSINESS OVERVIEW**

We operate in three business sectors: Architectural, supplying glass for the world's buildings and for solar energy applications; Automotive, producing glass and glazing systems for vehicles worldwide; and Technical Glass, operating in the display, optical electronics and glass fiber sectors.

\*All figures for financial year ending 31 March 2016

### Architectural

A leader in float glass technology and coatings

Contribution to Group sales\*

## Sales by region

Financial year 2016



## Main products

- Thermal insulation glass
- Solar control glass
- Fire protection glazing
- Glass for solar energy
- Noise control glazing
- Safety and security glazing

### **Proportion of Group** CO<sub>2</sub> emissions

62 percent

### Automotive

Supplying all major vehicle manufacturers and the after markets

Contribution to Group sales\*

### Technical Glass

World leader in thin display glass and optical devices for electronics

Contribution to Group sales\*

## Sales by sector

Financial year 2016



## Main products

- Cover glass
- Copier/printer lenses
- Glass cord
- Battery separators
- Anti-corrosion coatings
- Fine crystal

**Proportion of Group** CO<sub>2</sub> emissions

5 percent

## Financial year 2016 Europe 44%

Sales by region



## Main products

- Solar control glass
- Glazing systems
- Laminated glass
- Toughened glass
- Security glazing
- Lightweight glazing

### **Proportion of Group** CO<sub>2</sub> emissions

33 percent

## **VALUE CHAIN**

The NSG Group, working in partnership with its suppliers, aims to deliver products and services, through our manufacturing, processing and distribution operations, that benefits customers and supports the sustainability agendas of all our stakeholders.



The benefits from glass products can be enjoyed for a lifetime. When the product is no longer required and the glass is adequately segregated, it can be recycled an infinite number of times.

# ARCHITECTURAL

## Our products are at the heart of modern architecture and play a beneficial role in addressing some of the major environmental challenges of buildings.

On average, buildings account for around 50 percent of the energy consumed in developed economies. The correct choice of glass can help to reduce the capital outlay, running costs and associated carbon emissions of buildings.

A study undertaken by TNO for Glass for Europe concluded that up to 170 million tonnes of CO<sub>2</sub> could be saved annually by 2020 if all Europe's buildings were fitted with solar control or low-e insulating glass units.

Our products offer advanced functionalities including fire protection, noise attenuation, security, electro chromics, self-cleaning and electrical conductivity.



Our products play a vital role in addressing global building energy-efficiency challenges and reducing CO<sub>2</sub> emissions.

In cold climates, low-emissivity (low-e) coated glasses like Pilkington Energy Advantage<sup>™</sup> reflect heat back into the building and reduce heat loss through the window, while allowing high levels of valuable free passive solar energy to heat buildings without significant loss in natural light.

In hot climates, the reliance on air conditioning is mitigated through the use of advanced solar control coated glass that transmits the majority of the sun's visible light into buildings, while reflecting up to 75 percent of the solar heat and reducing glare.

Pilkington Spacia<sup>™</sup>, the world's first commercially available vacuum glazing, offers the thermal performance of conventional double glazing but with the same thickness as single glazing. Pilkington Spacia<sup>™</sup> Cool achieves a U-value of 0.9W/m2K and is commonly used in historic buildings and special applications.

### **BUSINESS**





Pilkington fire-resistant glass is known for offering trusted transparent solutions all over the world for more than 30 years. Today's range of products comprising Pilkington Pyrostop<sup>®</sup>, Pilkington Pyrodur<sup>®</sup> and Pilkington Pyroclear<sup>®</sup> are used in a variety of building, marine and rail transport applications.

Independent fire tests of applications incorporating Pilkington fire-resistant glass have demonstrated our emphasis on safety and the remarkable long term reliability of our products.

Environmental Product Declarations for Pilkington Pyrostop<sup>®</sup> and Pilkington Pyrodur<sup>®</sup> glasses have been verified according to international standards EN and UL.



During its life cycle, a solar panel can generate over 15 times the energy used in its manufacture. NSG's glass is an integral part of thin-film solar modules produced by leading companies in the solar energy industry.

As a technology leader in glass coatings and low-iron compositions, our products are helping our customers to manufacture increasingly efficient modules. Our anti-reflective coatings help maximize solar energy transmittance and NSG TEC<sup>™</sup>, a Transparent Conductive Oxide (TCO), is part of the system that generates an electrical current.

## AUTOMOTIVE



We are working across all our markets from cars to trains and tractors, to help customers develop new vehicles that are greener by design. Glass in vehicles offers more properties than simple transparency; consideration also needs to be given to acoustics, stiffness, weight, sealing, safety systems and solar control. We have also supplied glass for use in automotive photovoltaic roof systems to help reduce their reliance on conventional energy sources.

Our vehicle-glazing can provide advanced solar control properties by absorbing or reflecting infra-red energy from the sun. Approximately 30 percent of the heat loading on a car's interior comes through the windshield. Control of heat energy entering vehicles directly impacts air-conditioning usage leading to additional energy consumption and CO2 output. Windshield replacement provides an opportunity to improve the energy consumption of the vehicle by using Pilkington's EZ-KOOL® or NSG Angelguard99 that reduce the heat loading on a vehicle's interior and filter up to 99 percent of UV rays.



Advancements in vehicle technology are making glazing an integral part of protecting vehicle occupants and other road users. Cameras used in automatic emergency braking systems and HUD (Head-Up-Displays) for displaying critical driver information require a high level of component integration. The NSG Group is working closely with its partners to lead the change towards making our roads safer.

The importance of environmentally friendly vehicles is growing as consumers are demanding ever more energy-efficient models. Lighter-weight designs are an essential part of reducing vehicle CO2 emissions and improving their energy efficiency. Our in-house developments for glass-shaping technology make it possible for vehicle manufacturers to reduce the mass of glass components by up to 25 percent.







A vehicle's windshield is an essential piece of safety equipment that we take for granted until it is damaged.

Chipped or cracked windshields reduce visibility and can lead to loss of structural integrity over time. The NSG Group's Automotive Glass Replacement (AGR) services provide an extensive range of OEM quality replacement glazings to auto glass replacement professionals throughout the world, ensuring consumer glazings can be replaced quickly and to the same standard as the original.



The NSG Group is a leading manufacturer of glazing solutions for specialized transport vehicles including trucks, coaches, offroad, marine and lightweight rail vehicles. Our extensive R&D activities and vast experience in shaping techniques guarantee our ability to manufacture the largest and most complex windscreens.

Quality and safety are vital for the driver and can require train windscreens to be impact-tested to a range of international standards using a 94-calibre air cannon.

# **TECHNICAL GLASS**



Glass as a high-tech material offers many opportunities being light, strong, fire retardant, non-conductive and resistant to chemicals. Our patented products are used in transmission belts to improve fuel consumption, LED printers that use less energy to operate, and coatings to protect the longevity of our buildings and equipment. Our expertise in the manufacture of ultra-thin float glass is allowing the development of the next generation of touch-screen devices.



NGF, who produce the Group's advanced glass cord technology, is enabling the automotive industry to develop the next generation of energy-efficient vehicles.

The technology is primarily used in engine timing belts and Electric Power Assisted Steering (EPAS) systems to reduce fuel consumption and improve CO<sub>2</sub> emissions.

NGF's HTS (High Tensile Strength) glass cords significantly improve belt flexibility and stretch resistance. This advanced technology has been successfully incorporated into innovative 'Belt in Oil' systems that further improve engine refinement. The system delivers the quietness and more efficient running of a belt but with the durability of a conventional timing chain. Furthermore, the belt is capable of remaining in service for the life of the engine.





We are a world-leading supplier of ultra-thin glass for small LCD applications.

Our Ultra Fine Flat Glass (UFF) is produced in thicknesses as low as 0.3 to 1.1mm. These products are increasingly being used in the growing touch-panel market, particularly in mobile phones, tablets, computers and now expanding into use in buildings and vehicles. This technology helps reduce the need for additional peripheral equipment, allowing people to have a more natural interface with technology.



The NSG Group is leading the development of advanced glass materials for use as battery separators in the next generation of batteries that support society's infrastructure and help to solve environmental issues.

Absorbent Glass Mat (AGM) separators are used in a wide range of infrastructure applications including wind farms, data centers and communication stations. Polyethylene (PE) glass separators are often used for Idling Stop & Start(ISS) batteries in cars to improve their CO<sub>2</sub> emissions and fuel economy. Our Super Glass Paper (SGP) technology with a 20µm thickness and & gt;85 percent porosity is supporting the development of the next generation of Lithium ion Batteries.





**Bacteria and Pollutant Detectors** 

The NSG Group's proprietary SELFOC<sup>®</sup> Lens Array (SLA<sup>®</sup>) technology is used extensively in scanner and printer heads for office equipment.

The technology has been further developed to provide fluorescence detection that can be tuned to detect bacterial contaminations or pollution. The detectors are handheld so that environmental inspections can be performed away from the laboratory. The fluorescence detection can also be tuned for applications in bio chemistry or quality inspections on a production line.

# **CORPORATE GOVERNANCE**

## Corporate governance is a key element in the sustainability activities of the NSG Group.

We aim to maintain high levels of accountability and transparency, disclosing business goals and guidelines that clearly demonstrate a responsible management approach to all our stakeholders.

#### NSG Group Corporate Governance Guidelines

The NSG Group Corporate Governance Guidelines announced in May 2015 support the Principles of the TSE Corporate Governance Code, which took effect on 1 June 2015. These Guidelines provide the basic principles and framework for the NSG Group to enhance its corporate values in a sustainable way, on a medium to longterm basis, thus increasing the common value of the Group for our various stakeholders, including our shareholders.

Under the corporate governance structure in the Guidelines including the balanced roles and membership of the Board of Directors, the three committees of Nomination, Audit and Compensation, and the independent External Directors and Executive Officers, we aim to ensure the appropriate system of check-and-balance and accountability. This enables management to make decisions in an effective, efficient and ethical manner, and maintain good relationships and address the needs of our stakeholders.

Along with the Guidelines, we also published related policies such as the Policy on Constructive Dialogue with Shareholders, General Criteria to Select Candidates for Director, and Policy and Procedure on Appointment of Executive Management. The NSG Group Corporate Governance Guidelines document itself and the related policies are also available on our corporate website: http://www. nsg.com/en/sustainability/corporategovernance/approach. These actions build on initiatives taken by the Group over the past few years to strengthen corporate governance and mark our progress towards the achievement of the advanced level of corporate governance.

#### Three-committee system

The Group adopts a three-committee structure and hence establishes the Board of Directors, Nomination Committee, Audit Committee, Compensation Committee and Executive Officer.

We believe the adoption of the model has introduced additional safeguards for shareholders, increased transparency and enhanced corporate governance by separating the functions of execution and oversight, with the role of the independent External Directors strengthened. The NSG Group is governed by its Board of Directors, which is appointed by resolution at the General Meeting of Shareholders. The Board comprises three directors, concurrently serving as Executive Officers, and five External Directors including four independent External Directors. The Board is chaired by an independent External Director, Günter Zorn. In the fiscal year 2016, the Board of Directors met 12 times. The Board of Directors oversees the Group's economic, social and environmental performance and compliance with internal and internationally agreed standards, including the Group Codes of Ethics and Values and Principles.

The Nomination Committee decides the details of the agenda items to be submitted to the General Meeting of Shareholders concerning the appointment and removal of Directors. Chaired by an independent External Director, Masatoshi Matsuzaki, the Committee consists of five members, including four independent External Directors.

The Audit Committee, chaired by an independent External Director, Toshikuni Yamazaki, comprises four independent External Directors. It conducts audits of the execution of duties by directors and Executive Officers and ensures that adequate risk management processes are followed. It also decides the details of agenda items to be submitted to the General Meeting of Shareholders concerning the appointment and removal of Accounting Auditors.

The Compensation Committee makes decisions on compensation of individual directors and Executive Officers. The Committee is chaired by an independent External Director, Yasuyuki Kimoto, and comprises five members, including four independent External Directors.

#### **Risk management**

The scope of our operations introduces potential risks to our business activities, requiring effective risk management. These include risks of fluctuation in interest rates, foreign currency exchange rates, credit ratings, energy prices, and business disruption. Our enterprise risk management process enables the impact and likelihood of key risks to be assessed in a standard format. The information is used to assess the cumulative risk exposure of the Group and promote effective global risk responses, thus strengthening our overall risk management structure.

(NB)

We have one newly elected external director pursuant to a resolution of the Extraordinary General Meeting of Shareholders held on 24 March 2017, whose term of office has commenced from 1 April 2017. He does not fall into our criteria for independency, hence as from 1 April of this year our board of directors consists of five external directors (among them four being independent directors) and three directors concurrently appointed as executive officers.

In relation to such new appointment, we do not envisage any plan on altering the current membership composition as regards any of nomination, compensation or audit committee. We continue to commit ourselves to ensure that the appropriate systems of check-and-balance and accountability be in place through the system of and as company with three committees governance structure

## CODE OF ETHICS

## Our Code of Ethics represents our behavioral commitment to the Group.

#### Ethics and compliance

Our Code of Ethics was updated in 2015 to make it more relevant to the NSG Group. The Code was made available in all 19 Group languages. Ethics Champions in every region were carefully selected to provide vital communications and promotion of the Code at the local level. These Champions attended workshops to prepare them for these activities, with a special focus on supporting line managers in the understanding of the Code and facilitating the ensuing ethical discussions. Our line managers are responsible for promoting understanding of the revised Code and discussing issues and ethical behavior with their employees. Discussions on ethical dilemmas have been very engaging and have raised many relevant issues.

Alan Graham continues in his role as Group Chief Ethics and Compliance Officer. His responsibilities include the development, implementation and maintenance of an integrated internal ethics and compliance management and control system, as well as the creation and review of relevant Group policies and procedures. Group Ethics and Compliance regularly reports to the Audit and Management Committees.

The NSG Group does business in 36 percent of the countries that scored at least 50 or higher in the 2015 Corruption Perceptions Index and has commercial agents in 20 percent of those countries. NSG implemented a 3P Due Diligence system and is monitoring over 2000 third parties that meet certain risk criteria. A notification process for new third parties was developed internally with Group Procurement. The Group conducts a continuous risk-based assessment to determine which employees face risks related to bribery, corruption and competition laws. Over 65 percent of the NSG Group's floor workforce is required to complete annual compliance training, via a third-party vendor, covering bribery/corruption, competition law and reporting unethical behaviour through the Group's Ethics and Compliance Education Center. Additional reporting of concerns and fraud modules were added in FY2016. All are required to be familiar with the compliance program policies, manuals and procedures. Key compliance contacts have been identified in each SBU and Group function and are responsible for ensuring that the key roles in their area of responsibility are kept informed of program updates and are meeting the program requirements. Group Ethics and Compliance issues an ethics and compliance brief on a regular basis to senior managers and key compliance contacts. The Group's communications team translates the brief into all Group languages and posts the publication onsite communications boards.

Group Ethics and Compliance has partnered with Group Internal Audit to include both Anti-Bribery Anti-Corruption [ABAC] and competition law minimum controls in any site audit. Relationships with lobbyists are covered by the Group's Anti-Bribery Anti-Corruption [ABAC] program as it relates to third parties. Public policy development and lobbying information is found in the Group's Code of Ethics and on the website.

Our 'Reporting of Concerns' policy has been updated to ensure that all reported ethics- and compliance-related concerns are brought to the attention of the Chief Ethics and Compliance Officer by requiring managers to submit concerns reported to them using a standard Ethics and Compliance report form. While employees are encouraged to speak to HR or line management first, the Group continues to allow employees to voice corporate governance issues through an externally provided updated Ethics and Compliance Hotline either by phone or through a web portal with anonymity where legally allowed. This hotline is available in all Group languages and employees are also able to ask ethics- and compliance-related questions through this web portal. Posters have been updated and distributed at all locations. A Group Concerns Investigation Procedure has been established to ensure all relevant concerns are sufficiently and consistently investigated.

The Group's Ethics and Compliance Hotline has been made available to our commercial agents through the issuance of a Commercial Agents Compliance Manual. Information on how to access the Ethics and Compliance Hotline will be made available on NSG's external website and thus access will be extended to all. Since inception there have been 100 reported concerns managed via the Ethics and Compliance Hotline case management system. FY16 experienced 43 allegations reported via the Ethics & Compliance Hotline and Manager's Report Form.



## HEALTH AND SAFETY

### Significant Injury Rate (SIR)



### Type of significant injury



Significant injuries	FY2015	FY2016
Glass handling cuts	17	11
Manual handling	13	7
Slips, trips, falls	6	8
Engineering	8	0
Machinery	З	6
Blade cuts	4	2

Our safety programs emphasize the importance of individuals taking personal responsibility for appropriate safe behavior, with managers taking the lead through their commitment to key safety leadership behaviors.

#### Safety organization and strategy

The NSG Group Sustainability Director reports to the Chief Operating Officer. Monthly safety updates are provided to the COO while more in-depth management reviews are completed every six months with the senior operations team comprising the heads of the four SBUs and the heads of the Group functions. These reviews were held in the UK in March 2016 and North America in September 2016. All injuries at work are regarded as avoidable. We require full reporting of all incidents, no matter how minor, and appropriate investigation to ensure we learn from all such events. The Group has a focus site approach which provides additional support and more regular reviews for sites that have more than a defined number of significant injuries.

#### Safety performance

Safety improvement begins with a focused approach to the prevention of conditions and behaviors which lead to injuries. NSG drives proactive safety by Measuring Safety 4 Ways, which includes:

Safety Improvement Plans (SIP) – reducing hazards and risks through planned improvements of conditions and behaviors that lead to incidents.

Incidents of High Potential Severity (IHPS) – reviewing all incidents with a critical eye, asking what could have happened and could the incident have led to a serious injury or fatality; then taking preventative actions.

Key Safety Behaviors (KSB) – focus on how our employees complete tasks, working to reduce at-risk behaviors through frequent feedback.

Significant Incident Rate (SIR) – The Significant Injury Rate (SIR) is our primary reactive indicator. The SIR records injuries requiring medical treatment or the reallocation of duties to allow an individual to continue working, expressed as a rate per 200,000 hours worked.

The Significant Injury Rate for the year to 31 March 2016 of 0.33 represents a 6 percent improvement in safety performance compared to FY2015 on a like-for-like basis. This is in line with the Group's Medium-term-Plan, focusing on a year on year improvement.

We are committed to our high-risk reduction program and the safety tools we have in place.

Following a fatal accident in FY15, all SBUs have implemented improvement plans which include assessing where employees work where there is a risk of falling; identifying areas where the tasks can be eliminated; and completing actions where working at height is required to prevent employees from falling. Finally, we have improved the type of PPE employees wear in particular the requirement to wear helmets with a four-point harness.

## FOUNDATIONS



### **High-risk activities**

We continue to focus on the following high-risk activities, tracking projects related to:

- Vehicle and pedestrian safety
- Machinery safety: guarding, frequent access and isolation
- Contractor control, including permits
- Materials handling: moving glass, load security, grabs, trolleys and pallets
- Driving

#### Moving safety to the next level

The safety strategy remains the same, with a focus on improving the effectiveness of our safety tools and programs. We believe that our employees and supervisors will make the difference in moving safety to the next level through the following initiatives:

- Independent audits of our safety tools to drive a more consistent approach, develop our safety skills and improve our shared learning. These audits were cross regions and cross sites within a region for maximum impact.
- Further improve our level of proactive employee involvement as a means of continuing to change our safety culture.
- Further develop our first-line supervisors to improve our overall level of safety leadership.

### NSG Safety Day

The NSG Safety Day took place on 13 October 2016 and continued to be a successful global event. All sites organized health-related activities and employees were given the opportunity to improve their first aid, firefighting and emergency response skills. Senior managers attended sites to demonstrate their personal commitment and the opportunity was taken to celebrate safety success.

#### **NSG Group Safety Award**

The NSG Safety Award aims to increase awareness and reward individuals or teams for outstanding health and safety project initiatives. Many of the best ideas for reducing risks come from employees. Judging was undertaken by a panel of senior managers and EHS experts.



NSG Group H&S Award Winner

The winner is a team from Rossford Float, USA for their 'Dock Safety Gates - Fork Truck and Pedestrian Segregation' project.

The winning project eliminates operator exposure to the risk zone at truck loading docks. It increases communication between team members, resulting in segregation of pedestrians and fork lift trucks by installation of swing gates.

The judges' decision was influenced by three significant aspects of the project. Firstly, the project addresses a major risk activity. Secondly, it pays close attention to practicality. Thirdly, the system was developed, tested and contributed to strongly by operators who use the equipment.



Automotive OE sites in Sagunto, Spain and Niles, USA, won a commendation for 'Shop floor engagement by using safety videos'. These are independent but similar culturally important projects, which demonstrate excellent employee involvement in preparing video clips on Key Safe Behaviours and in showing and sharing them with the whole workforce.



# **ENVIRONMENTAL POLICIES**

We take our environmental responsibilities extremely seriously. We require all of our operations to meet local legal standards but apply our own corporate standards where these are stricter than the law.

### **Our Environmental Policy**

Our Group Environmental Policy defines our approach on environmental matters. In particular, it outlines our management of both current activity and the legacy of past and inherited liability. It reinforces our commitment to using good scientific principles to try to predict and assess our impacts on the environment, both positive and negative.

We are in a strong position to help mitigate the effects of climate change by producing products that conserve energy in buildings and vehicles.

Given the nature of our business, we acknowledge that our activities will inevitably have an environmental impact, but we have taken steps to minimize the adverse nature of any impact and have put in place systems to try to ensure that we manage such impacts in a controlled manner. The use of many of our products will lead to positive environmental impacts.

Principal among the tools we use is our environmental management system, which is certified to ISO 14001 for the vast majority of our glass manufacturing and processing sites.

We are committed to reporting on our performance, both good and bad. Environmental performance is monitored and reported for manufacturing operations that are under the direct control of the NSG Group. We continue to work with regulatory authorities worldwide on issues relating to historical industrial activity on and around Group premises.

### Data collection

Environmental and safety performance data is collected across the Group using an online electronic data reporting system known as Airsweb<sup>™</sup>. This database is multilingual and accessed over the corporate intranet by sites under NSG operational control, allowing monthly updating of relevant information.

Environmental data is collected under the broad headings of energy, emissions to air, water usage, recycling and waste. The data collected is based primarily on the core environmental performance indicator set of the Global Reporting Initiative (GRI).

In addition to the collection of environmental emissions and resource usage data, the Airsweb<sup>™</sup> system also incorporates an incident reporting system. This allows the timely reporting and recording of incident data, both safety and environmental, as well as provision for tracking the progress or remedial actions and communication of learning points.

### Monitoring performance

Supplementing the routine monitoring of our business, we also maintain a number of central registers used to guide our strategic development and maintain a high level of corporate governance in the sustainability field. For example, a register of all furnaces, their associated permits, relevant legislation and abatement capabilities is maintained and used to support the assessment of any proposed changes in operation or design.

To ensure a consistent and innovative approach, we operate a number of multidisciplinary design panels whose task is to ensure full assessment and review of proposed changes. Our stage gate process ensures that an appropriate level of information and resource is applied to an issue at set points within the development of a project or proposal. This ensures the most efficient use of our resources and encourages innovation.

For glass-manufacturing plants we have defined our strategic approach to abatement in order to ensure that across the world we hold fast to our principles, even in parts of the world where legislative controls are less well developed.

#### Certification

We aim to certify our manufacturing facilities to the internationally recognized ISO 14001 environmental standard and now have 81 certified sites around the world, representing 70 percent of our business by turnover.

Our Automotive business was one of the first in the automotive industry to achieve a corporate certificate for environmental management. A single ISO 14001 certificate from TUV SUD Management Service GmbH covers group functions and the vast majority of our Automotive plants worldwide.

NSG's Tampere and Ylojarvi plants in Finland achieved ISO 50001 certification of its energy management system for automotive glass processing in October 2015. This is in addition to our already certified German and Italian glass-melting and processing sites.



### **Environmental Product Declarations**

An Environmental Product Declaration (EPD) is a verified and registered document that communicates transparent and comparable information about the life-cycle environmental impact of products.

The German Institute of Building and Environment (IBU) awarded EPDs for Pilkington Profilit<sup>®</sup>, Pilkington Pyrostop<sup>®</sup> and Pilkington Pyrodur<sup>®</sup> fire-resistant glass, according to ISO 14025 and EN 15804. The Ecoprofile results allow architects and planners to access reliable environmental information and complete detailed sustainability assessments of buildings.

Pilkington Deutschland AG now has the authorization to mark Profilit<sup>®</sup> and both fire-resistant product lines with the IBU logo in monolithic format or insulating glass. The declarations are IBU listed and can be ordered upon request.

#### 2016 NSG Environmental Awards

NSG aims to increase awareness and award individuals or teams for outstanding environmental initiatives that achieve our policy objectives. It is recognised that many of the best ideas come from engaging with employees. This year's EHS award was won by a team who found an innovative way to minimize raw material consumption and convert a waste product into a material for re-use.

#### **EcoVadis CSR Rating**

EcoVadis operates an independent, external platform allowing companies to assess and benchmark their environmental and social performance on a global basis.

The process assesses company policies, implemented procedures and published reports with regards to environmental, labor practices & human rights, fair business practices and sustainable procurement issues. The assessment is conducted by CSR experts of EcoVadis on the basis of company answers to a survey which is dynamically adapted to country, sector and size, using scorecards covering 150 industry categories and 21 CSR criteria. The rating is based on supporting documentation, public and stakeholder (NGOs, trade unions, press) information.



2016 NSG Environmental Award Winner

The winner of the NSG Group Environmental Award 2016 is the San Salvo Float team in Italy, supported by R&D - Chemical Analysis Team - in Lathom for Recovery of the Selenium containing dust from the waste gas treatment plant of the SS1 float project.

The winning project resulted in the recovery of dust with Selenium from the Electrostatic Precipitator into the float process. The dust can now be safely recycled into the Privacy Glass manufacturing process with no adverse effects on glass colour or quality, avoiding disposal of dust as a hazardous waste and reducing the usage of raw materials.



of the Group's CSR performance and understand areas for improvement. We were rated as Silver regarding our approach to CSR management.

## ENERGY USAGE

#### NSG Group energy usage



Heavy Fuel Oil TJ





We work continuously to minimize energy input into all our processes, so that the usage of glass contributes net benefit to sustainability.

#### Our energy usage

For both environmental and financial reasons, we use natural gas as the fuel of choice for glass melting. Furnaces are gradually being converted from heavy fuel oil to gas. Small quantities of diesel and LPG are used for space heating and back up generators. See the graphs for consumption details.

#### Initiatives to reduce energy usage

#### Energy Committee

All initiatives are monitored by the Heads of SBUs and Group functions at six monthly Energy Committee meetings, chaired by the Chief Operating Officer.

#### Energy management pilot plants

The concept of the energy pilot plants is to make a step change reduction in energy consumption by using energy more efficiently and effectively. Four pilot sites were launched in FY13 as phase 1 followed by seven phase 2 sites in FY15 and FY16. Five further pilot sites were launched in Japan, Vietnam and Brazil this year. Together these 16 pilot sites cover 66 percent of the NSG Group's energy spend.

Cross-functional pilot site teams are led locally by the plant manager, with proactive support from other Group functions, and extensive use is made of third party suppliers. Over 300 projects are under evaluation or being implemented.

#### Operational energy-efficiency projects

The Operational Cost Saving program aims to reduce all operational costs in the area of prime and overhead costs. One of the largest prime costs for the Group is energy. To support the cost saving activities across sites, a deep analysis of all of the energy projects within the OCS database is regularly completed. Multiple projects were identified for rapid dissemination in FY16 to deliver energy consumption and cost savings. Each manufacturing site within the Group had at least one active OCS energy project in FY16.

Led by Manufacturing Excellence and assisted by other Group functions, NSG sites identified more than 100 energy-optimization opportunities, resulting in annual CO<sub>2</sub> savings in excess of 30kt.

Major projects include furnace fuel combustion optimization, reducing electrical requirements of motors optimizing compressed air systems, energy sub metering, energy efficient lighting, fuel switching, cogeneration processes, waste heat and energy recovery.

Energy metering is being used to develop projects, identify energy waste & manage tariffs. Metering status surveys were completed in FY16. New metering has been installed as part of 3rd party funded projects and we have expanded usage of existing software to enhance basic metering capabilities.

A directory of potential novel technologies available across the glass industry is being created, including recommendations for appropriate application at Group sites.

The opportunity to disseminate existing ideas from the pilot plants, and gain benefits more widely across the Group is done by Sharepoint discussion boards and face to face energy workshops – Italy November 2014, Weiherhammer May 2015. A workshop was held during the Melting Training Course in October 2016. 45 participants from 14 countries met to generate ideas and disseminate team awareness of energy saving technologies and activities. Several new approaches were discovered.



#### Management systems

We have achieved ISO 50001certification across all operations in Germany, Italy, Finland, and most recently Automotive engineering. Investment in sub-metering hardware and software installations allows a high level of transparency in energy consumption and enables a sophisticated energy-planning process with improvement activities, target setting and frequent reviews to be established.

#### Renewable on-site energy generation and alternative fuels

The use of a waste-derived biofuel oil instead of heavy fuel oil in a glass-melting furnace has cut CO<sub>2</sub> emissions by 8kt per year.

Our Rossford technical center in North America produces about 7 percent of its own electricity with on-site photovoltaic generation. We have installed photovoltaic panels on the roof and former car parking areas of our German Weiherhammer plant.

#### Partnership with suppliers

We continue to partner with key suppliers to develop projects to reduce energy consumption in our manufacturing sites. Close collaboration with leaders in specific technologies is enabling us to implement optimum solutions to specific energy management challenges. Collaborative projects have also been implemented to address compressor inefficiency, to make better use of waste heat generated in our glass-making processes and to reduce peaks in electricity demand.

#### Innovation in cullet recycling

Our Watson Street plant continues to invest in plastic boxes to travel on floatliners with customer glass deliveries. The collected downstream processed cullet is diverted from landfill and, when re-melted, reduces energy consumption and raw material decomposition, saving 3,000 tonnes CO<sub>2</sub> emissions per year.

#### Employee energy efficiency awareness

We have continued our efforts with an ongoing program of work across all sites to increase general energy awareness. This program involves a number of teams within the manufacturing organization with the objective of delivering significant improvements in the energy efficiency of our operations and includes a Group-wide database of energy-saving projects.

A specialist energy training event took place in November 2016. 19 European delegates across all businesses attended the externally facilitated five day program of seminars. They covered numerous aspects of energy management and included a float plant audit. Examination success was required for certification and delegates were required to submit an energy audit of their site with an action plan for energy management projects within three months of course completion.



Aken plant wins national energy efficiency award



Specialist energy management training seminar



## AIR EMISSIONS



Example of a pollution control plant installed at the NSG furnace at Maizuru, Japan. The electrostatic precipitator for dust control is in the centre, with the acid gas scrubber to the left and the chimney base to the right. Glass manufacture is an energy-intensive process, involving the melting of raw materials at high temperatures. Principal process emissions are to air due to the combustion of fuel and decomposition of carbonate raw materials.

#### **Emissions to air**

Glass-melting furnaces produce various pollutants. The most significant of these are: sulfur oxides from refining agents and oil fuel contaminants; nitrogen oxides formed from the combustion air in the hot combustion process; particulate matter derived from the melting process; and carbon dioxide from both the raw material decomposition and the combusted fuels. We are tackling these emissions with a range of primary and secondary control techniques. Primary methods are designed to reduce pollutant formation at source and include techniques such as avoiding certain raw materials and heavy fuel oil types that contribute to emissions. Other primary techniques include using special burners and operating the furnace in an energy-efficient manner. There is special focus in this latter area as it will also reduce production costs. Secondary control involves employing abatement equipment to remove the emissions from the furnace waste gases before they are emitted through the chimney. Techniques such as acid scrubbers, electrostatic precipitators and selective catalytic reduction units are now widespread and are being installed at more sites around the world.



#### Monitoring and reducing carbon emissions

In 2015, the NSG Group was responsible for the emission of 4.0 million tonnes of  $CO_2$ . This is a 1.6 percent reduction on the previous year due to many proactive operational cost saving initiatives described on pages 24 and 25. Our Scope 1 emissions were 3.0 million tonnes. These direct emissions occur from our furnaces and from fuel used in bending and toughening furnaces. In 2015, our measured Scope 2 indirect emissions were 1.0m tonnes of  $CO_2$  and our estimated Scope 3 emissions were 0.9 million tonnes  $CO_2$ . In the operation of our float plants, heavy oil to natural gas conversion has helped to reduce carbon emissions by around 50 percent over the past 40 years and a combination of design and operational innovations has made further progress. We aim to reduce  $CO_2$  emissions per tonne of equivalent product by 1 percent per year. until 2020. This target has been achieved year on year for the last three years. We are currently investigating the requirements of Science Based Targets.



### Recycled glass to improve efficiency and reduce emissions

Glass for recycling is a valuable resource. Wherever quality allows, we recycle any glass off-cuts or cullet within our own glass-melting lines. Glass from our downstream operations and from our customers represents a potentially useful resource to us. We gain a double benefit from the use of such cullet: its use to make glass reduces the requirement for raw materials and avoids disposing of what would otherwise be a waste material and closes the recycling loop. Ten percent cullet use saves three percent furnace energy and leads to reductions in CO<sub>2</sub> emissions. One of our sites has recently manufactured glass using 100 percent cullet. Cullet return projects are ongoing to try to minimize the need for virgin raw materials.

Landfill is the least favored disposal option. If glass is produced that cannot be remelted on-site, it is sent, where practicable, for external recycling.

# Architectural business in Europe introduces lightweight specialised trailers increasing payload: reduces number of journeys, driven miles and $CO_2$ emissions

Working with our lead suppliers across Europe, during late 2015 and all of 2016 the Architectural Upstream SBU successfully introduced new lightweight "innenlader" or "floatliner" trailers in the UK, Poland, Italy, Germany and the Nordic region which enabled an extra pack of glass to be carried in the truck on certain inter-plant routes as well as selected customer deliveries; not all locations are able to accept these larger deliveries.

In the UK, our carrier replaced the entire fleet of floatliner trailers with the new lightweight versions. The positive impact of this new equipment on our upstream glass transportation activities during 2016 has been significant.

UK ARCH Upstream	2015	2016	% Change
Volume (tonnes)	229,419	335,867	12%
Kilometres	3,408,672	3,460,096	1.5%
Average distance (km)	291	279	4.3%
Fuel (litres)	1,358,207	1,190,425	14%
CO <sub>2</sub> emissions (tonnes)	3640	3178	14%

Our transported volume in the UK upstream business actually increased by 12 percent during 2016 compared with 2015. However, the number of additional transport journeys required to move the volume was only up by 6 percent and driven kilometres increased by only 1.5 percent.  $CO_2$  emissions reduced by over 460 tonnes or 14 percent.

In our Italian operations, 46 percent of deliveries were performed in the new "inloader" trailers reducing the number of truckloads required to transport the same volume of glass by 124 trucks, avoiding over 100,000 driven kilometres (4.4 percent reduction) by inloaders and reducing the amount of CO<sub>2</sub> emissions by 140 tonnes, a reduction of 4.4 percent across the specialised fleet and a reduction of nearly 3 percent overall the glass transport activities.

In Germany, our carriers have been phasing in the new lightweight innenlader equipment and the impact by the end of 2016 was a reduction of 130 tonnes in CO<sub>2</sub> emissions. Over 10 percent of all loads were carried in the new lightweight trucks. Our Polish carrier has been able to carry 5.2 percent more glass per lightweight truck for our glass imports to our Downstream business in Poland, reducing the number of full truckloads required and emissions by 34 tonnes (5.2 percent) in 2016.



Transport and Warehousing activities account for 16 percent of the NSG Group's procurement spend across its global operations. Focus is on the provision of safe and ontime service to our plants and our customers by our selected suppliers as well as value for money. In addition, there is a strong emphasis on improving efficiency, reducing empty driven miles and increasing the weight of product carried. All of these initiatives should also improve the Group's impact on the environment by reducing the amount of CO<sub>2</sub> emissions to the air.



# MINIMIZING WASTE



Pilkington Architectural, UK, won a commendation in the 2016 NSG Group Environmental Award for glass grinding slurry reclamation.

The robust teamwork between PA, R&D and Watson Street site led to a solution to re-melt glass grinding slurry from PA operations. This avoids waste disposal at one end and the same quantity of virgin raw material at the other.



Another commendation award was won by R&D Float and Rolled Glass Technology, UK, supported by San Salvo, Italy for printed cullet recycling. This is a significant activity that enables us to recycle cullet with ceramic ink at our own float operations rather than sending cullet to offsite recycling. The project enables printed cullet to be added to darker tints in limited amounts with minimal glass colour changes. NSG Group promotes the efficient use, reuse, recovery and recycling of glass and other materials involved in glass manufacture, processing, packaging, and delivery.

### **NSG Group waste**



### **Recycling and waste composition**

The glass manufacturing process itself produces very little waste material. All trimmed glass from the manufacturing processes is recycled back into the melting process. PVB is used to manufacture laminated glass. PVB trims from the edges of the laminated glass are returned to PVB suppliers to be recycled in their manufacturing processes. Our remaining waste to landfill consists mainly of waste glass, reject batch, general waste and glass-grinding sludge. The NSG Group succeeded in reducing the waste sent to landfill by 50 percent since 2007 and set a new Sustainability target to reduce this environmental impact again by 20 percent on 2013 by the end of FY2018 (see page 5).



#### Grinding sludge

This waste stream cannot be prevented but we have been actively seeking recycling partners to divert this waste from landfill and provide a raw material for concrete products and other aggregate manufacturers.

### **ENVIRONMENT**



#### Float rejected raw material

In 2016, we continued to seek recycling opportunities for glass dust and rejected batch – occasional off-specification raw material that often cannot be blended and dust collected by the pollution abatement equipment. Automated process monitoring and control systems are being implemented to proactively reduce the number of reject batches at our Rossford plant and our plant in Ottawa is constructing a new batch plant to reduce batch spillage.

#### Waste glass

The sites producing the highest volumes of waste glass reviewed their cullet segregation and recycling practices to find ways to increase the amount of cullet sent for recycling in float plants and to improve recycling. The Sungai Buloh plant in Malaysia implemented recycling of all printed cullet and found a recycling partner for laminated waste glass. All sites are reviewing recycling opportunities for contaminated cullet and glass dust.

#### General waste

Focus and support has been applied to the highest volume producers to further improve general waste segregation and procurement have been actively involved in finding local recycling partners.

#### Automotive glazing ingredients

In Automotive, all supplied glazing parts and their materials are registered in the global IMDS (International Material Data System) to ensure we have complete visibility of ingredients, confirm material compliance and to identify opportunities for recycling. This data is shared with our Automotive customers, to support their own material compliance and recycling efforts.

PVB is used to manufacture laminated glass. PVB trims from the edges of the laminated glass are returned to PVB suppliers to be recycled in their manufacturing processes. In 2016, around 2,000 tonnes of PVB trim was returned to our suppliers or other recyclers to be reused.

#### Water management

In glass-making, water is used for cooling, and most of our plants operate with closedloop systems and so only require top up. Water is also used for washing glass in plants but there the need is for very high purity, so water is treated and then reused. We seek to minimize our water consumption by working with suppliers to recycle water and to install advanced water treatment facilities. This not only reduces the consumption of water itself but also the chemicals used in the treatment of the water.

Across the Group water consumption can vary considerably according to process and product demands as well as water quality. Approximately 2 m3 are required to manufacture one tonne of float glass and approximately 90 liters are required to process each square meter of automotive product. We withdrew a total of 20.9 million cubic meters of water in 2016. Our Group risk assessment shows that our largest water consuming sites are located in countries that do not have water supply issues.

#### Timber

In Europe, much of our glass is transported on steel stillages without packaging, utilizing specialist 'Floatliner' vehicles. We use a significant quantity of wooden packaging in our operations and work with our suppliers to design reusable wooden packaging. Much of the timber we use comes from sustainable forestry.

#### NSG Group water use

Total water use Mm<sup>3</sup>



## Source of NSG water withdrawal in 2015

Mm³



## CUSTOMERS

## We aim to be our customers' preferred supplier for glass products and related services.

Safety quality and service standards are key features in building relationships with our industry customers and end consumers.

### **Customer First**

Understanding our customers' position and proposing solutions that work for them is critical for a VA Glass Company. The NSG Group operates a leadership program for Sales and Commercial management teams with the objective to equip our managers with the tools and skills to enable them to respond to changing market demands.

The Architectural team are progressing their 'Customer First' approach which goes beyond simply improving the quality of our products and services. The objective is complete customer satisfaction that will only be achieved by defining what excellence means for each customer. Everyone across the organization has become a part of the solution to provide our customers with consistently positive customer experiences before, during and after their purchases across every point of contact in the NSG Group.

#### Product responsibility

We are committed to the safe use of our products, ensuring they can be effectively handled, fitted and used by our customers. We aim to provide customers with products and services that offer social, environmental and safety benefits. Our training and support helps our customers to identify and mitigate risks or to raise awareness of sustainability issues. We are committed to the safety of our products and to ensuring they can be effectively handled, fitted and used by our customers. This includes the safe handling of sheet glass or the correct fitment of windshields in vehicles to maintain their quality and strength.

### **Highest quality**

Quality is a key feature in building successful relationships with our industry customers and end customers. It is also a key factor in sustainability, because high quality can reduce waste throughout the supply chain, while improving production efficiencies. Quality encompasses design, development, manufacture, delivery, assembly and price of glass, as well as customer support. In the NSG Group, the achievement of high quality is supported by the use of rigorous quality management systems and standards. In the Architectural Glass business, the Group has ISO 9000:2000 quality management certification in Europe, Japan, North America and South America. Our European Architectural Glass business has been a leading player in the development of new glass product standards for the European building industry. These standards have provided a route for glass manufacturers to meet the European Construction Products Directive and apply to virtually all NSG Group products used in buildings.

#### **Product Development**

NSG Group is working closely with our customers to develop the next generation of automotive glazing that can help to improve the overall efficiency of vehicles. Lowering the weight of a vehicle will always have a positive impact on its efficiency but it can also bring compromises to other areas of the vehicle's design such as noise, rigidity or cost. To introduce new technologies into a vehicle's design requires a close technical partnership with the customer. Vehicles are designed to meet the needs for a range of end users so more than one solution is often required. For lightweight glazing, there are a number of technical strategies that are being developed that consider the glass thickness, glass composition, chemical toughening and the forming process used to produce the final product. This allows the design of the glazing to be tailored to meet the expectations of the vehicle's target market.

A recent example of this close customer relationship is Pilkington Brazil were recognized by Honda in South America for their support in the development and launch of the new Honda Civic.



### **STAKEHOLDERS**



#### **Product innovation**

The NSG Group is a global leader in manufacturing excellence and innovation, notably in the areas of glass melting, glass forming by the float process, online coating and complex shaping technology, especially for automotive windshields and backlights. The Group invested nearly ¥1 billion in R&D in FY2017.

The Group owns or controls approximately 4,000 patents and patent applications, predominantly in the fields of float glass production and processing, automotive glazing and also in the information technology field. It also has access under license to patents held by third parties.

The Group is active in selective licensing of its patents and technology, in the areas of online coating, encapsulation (of automotive glazing) and rain sensors for automotive glazing.



Advanced Driver Assistance Systems (ADAS) are technologies that are used to automate the process of driving, alerting the driver to dangers or avoiding collisions by bringing the vehicle to a complete halt in an emergency. They rely on inputs from multiple sensors including cameras and lasers that are often mounted behind the windscreen to give a clear view of the road ahead.

When a windscreen is replaced, the ADAS sensors need to be removed from their brackets and unplugged from the car. After the windscreen is replaced and the sensors are reattached, the ADAS systems must be recalibrated to ensure the safe operation of the vehicle. This process can be complicated and it normally differs between vehicles.

As these systems are becoming increasingly sophisticated, it is often not an activity that cannot be performed by the installer so the consumer must go elsewhere to have their vehicle calibrated. To solve this growing problem, Pilkington has developed Opti-Aim<sup>™</sup>, the first after-market glass calibration tool that allows windscreen installers to offer a full calibration service to their customers. The Opti-Aim<sup>™</sup> system offers installers the option to perform both static and dynamic calibrations as required by each vehicle.

Following the replacement of a vehicle's windscreen, Opti-Aim<sup>™</sup> is connected to the vehicle to make the process of recalibrating the ADAS systems simple and efficient. The tool communicates with the vehicle's computer to recalibrate the sensors and ensure all the ADAS systems are operating as originally designed.

## SHAREHOLDERS

## We aim to be our shareholders' preferred long-term investment.

We aim to keep our shareholders informed through a focused international investor relations program. This encompasses regular communications throughout the financial year, through meetings, publications, plant visits and our websites.

In communicating with our shareholders, investors, the financial community regulatory authorities and the media, our aim is to report in a transparent, timely and accurate manner.

Our overriding objective is to provide as much information as possible to help our shareholders and potential shareholders understand our strategy and performance, to enable them to take investment decisions.

Annual and interim reports are produced in both Japanese and English and widely distributed to stakeholders who may have an interest in our performance. These documents are also made available on our websites.

The CEO makes regular reports to the Board on investor relations and on specific discussions with major shareholders. The Board receives summaries of key research published on the Group. Shareholders have an opportunity at the General Meeting of Shareholders to ask questions of the Chairman and other members of the Board.

Our Investor Relations (IR) Policy reflects our aims to be open and fair and to comply with corporate ethics. The NSG Group is listed on the Tokyo Stock Exchange (TSE) and we disclose information in line with the TSE 'Rules on Timely Disclosure of Corporate Information by Issuers of Listed Securities'.

Where information does not fall under the category of timely disclosure rules, our policy is to communicate it swiftly and fairly, once it has been determined that the disclosure of such information is beneficial to investors.

#### Communicating our strategy

In May 2014, we announced the Group's Long-term Strategic Vision and Medium-term Plan (MTP). The information is available in both English and Japanese on our website.

#### Long-term Strategic Vision

We announced that our Long-term Strategic Vision is to transform the Group into a 'VA Glass Company'. 'VA' comes from 'value-added' and our aim is to:

- · consolidate our trusted reputation as a glass specialist;
- work closely with our customers in a range of global industries to deliver unique value through our products and services; and
- transform our float glass business, moving from a traditional business model towards one increasingly focused on VA.

### Medium-term Plan

Based on our Long-term Strategic Vision, the Group launched the Medium-term Plan ("MTP") starting in FY2015. The key objectives of the MTP are: to achieve financial sustainability; and to start the transformation into a VA Glass Company. The two financial targets are Net financial debt / EBITDA of 3x and Return on Sales (ROS) of greater than 8 percent. The Group also envisions a Return on Equity (ROE) of greater than 10 percent as an image to be achieved under the MTP. October 2016, in light of the MTP progress and changes in business environment, we announced the Medium-term Plan Phase 2. The Group positions a three-year period from FY2018 as MTP Phase 2 and initiates redoubled efforts to ensure the achievement of the targets.

#### (1) Growth strategy under MTP Phase 2

The basic policies are to accelerate and to evolve the VA strategy to build a robust profit base for sustainable growth, and to review each work process to develop a leaner business structure.

Specifically, during the MTP phase 2 period, the Group will implement the following four key measures.

#### Drive VA No.1 Strategy

Focus resources on VA shift in the areas with "high growth potential" and "NSG's core strength" to aim for a leading market position.

#### Establish Growth Drivers

Accelerate generation of new profitable growth with focus and selection.

#### Business culture Innovation

Continue to optimize each work process towards leaner business structure.

#### Enhancement of Global Management

Advance global management to achieve the Group's optimization.

#### (2) MTP Phase 2 - Financial Strategy

Believing it was necessary and appropriate for us to augment our shareholders' equity through procuring equity funding so that we could achieve a more stable financial base and establish financial sustainability sooner, the Company issued a total of JPY 40 billion Class A shares through third-party allotment on 31 March 2017 after the relevant proposals had been approved at the extraordinary general meeting of shareholders on 24 March 2017. About a half of the total proceeds of JPY 40 billion would be invested to drive the VA No.1 Strategy and establish growth drivers under MTP Phase 2. The rest would be used to pay down debt and we expect this could expedite our actions under MTP Phase 2 through initiating a virtuous cycle of a reduction in interest-bearing debt and further interest expense decrease. It is the intention of the Company to redeem the Class A Shares in cash.

### STAKEHOLDERS



#### Communicating our performance

We report our results on a quarterly basis. We hold half-year and year-end financial results briefings for securities analysts and investors in Japan, with further communications in the intervening quarters. The CEO, COO and CFO personally present and discuss financial results, charting our progress against our strategy and the future outlook for the Group. Supplementing this, the top management and IR team give background briefings to analysts and investors following the release of financial results. From time to time we arrange plant visits to enable analysts to see our operations at first hand. Over the past years, we have increased our focus on non-financial aspects of our performance relating to sustainability. This Sustainability Report is an important channel for communicating our progress. It is made available to shareholders in both English and Japanese versions, with additional information available on our website.

#### Shareholder composition

Majority of the shareholders as of end of September 2016 is individual investors based in Japan, the second largest shareholder is foreign companies and individuals. Nevertheless, as an international group based in Japan, we have expanded our global IR effort to meet the requirements of shareholders and potential investors around the world. Most of our publications are produced in both Japanese and English. Details can be found on page 40 of this Report and on our website. We organize 'road shows' for analysts, investors and potential investors outside Japan, when appropriate.



NSG Group Executive Officers present at an investors announcement in February 2017

## Distribution of NSG Group shareholders

(as at 30 September 2016)



## EMPLOYEES

NSG Group employee distribution graph (as at 31 March 2016)

(as at 31 March 2016)



## Focus on the NSG Group:

We have around 33,000 people working in 25 countries, speaking over 20 languages

#### Business / Area

/ Location	Group
Permanent Male FTEs	25,186
Permanent Female FTEs	
(18%)	4547
Total Permanent FTEs	29,733
Temporary male FTEs	2399
Temporary female FTEs	
(25%)	808
Total Temporary FTEs	3,207
Total Male FTEs	27,585
Total Female FTEs	
(16%)	5355
Total FTEs	32,940
Full time Male employees	27,855
Full Time Female employees	
(16%)	5,344
Part time Male employees	133
Part time Female employees	
(1%)	124
Total	33,456.0
Male Managers	2,572
Female Managers	
(12%)	343
Total Managers	2,915

## We aim to be our employees preferred place to work.

Our management philosophy values the health and safety of our employees above all other considerations and we aim to ensure that we provide a working environment that allows our people to reach their full potential and meet our customers' expectations.

Safety, Quality, Customer Focus, Sustainability and Ethical Leadership underpin everything we do, with the principles of trust, mutual respect and open communication being central to our Employment Policies.

### Diversity

Our Code of Ethics reflects our Values and Principles and defines for all employees what is expected of them. It particularly emphasises safety, respecting human rights, taking personal ownership for actions and communicating with openness and involvement.

The overriding basis of the Code is that we will carry out our business activities in a safe, professional, legal and ethical manner and in a way that demonstrates corporate social responsibility and sustainability.

The Code acknowledges internationally proclaimed human rights and these are also reflected in our overall employment policies and standards and provide our employees with reassurance on how they will be treated. Our equal opportunity and diversity policy aims to prohibit discrimination based on race, colour, creed, religion and beliefs, age, gender, sexual orientation, national origin, disability, union membership, political affiliation, or any other status protected by law.

We are working hard to improve diversity in the NSG Group and plan a number of new initiatives and projects in FY2017.

For example, the NSG Group in Japan has made a diversity and inclusion declaration around the specific targets they would like to achieve in terms of increasing the number of female managers and disabled employees in the Japanese workforce.

#### Communication

In October 2016 the NSG Group appointed Mamoru Ohara as the NSG Groups' Chief Communications officer (CCO)

In this role Mamoru is responsible for corporate and internal communications reporting directly to President and CEO Shigeki Mori. His main goal is to develop and execute an integrated strategy for internal and external communication to build the NSG Group's reputation, promote business and improve employee engagement

#### Employee Engagement

We continue to use our Employee Pulse Survey model to measure sustainable engagement within the Group. In 2016, the survey covered all four regions, 10 countries and involved around 6,360 employees and achieved a response rate of 85 percent. The NSG Group Overall Engagement Score was 72 percent.

The concept of such a survey is to regularly check the pulse or heartbeat of engagement within the Group. The tool features on-line collection; fewer and more focused questions that link to the heart of engagement; quicker feedback of results and an on-line results; and action planning tool for managers to use.

This Model allows managers to quickly turn feedback into targeted actions to ensure that high employee engagement remains a top priority. Electronic questionnaire completion and the on-line results dashboard and action planning tool enables the Group to carry out 'pulse' employee surveys annually to pick up on engagement issues quickly and target appropriate action locally.

### **STAKEHOLDERS**



### NSG Competency Model

In FY2017 the NSG Group revised its Competency Model to reflect the behaviours required for future business success and to help us move towards a VA culture and deliver the MTP.

As with the previous Model it is based on our Values, Principles and Business Drivers and has the three cornerstones of People, Vision and Results, which set out in practical terms what it means for every one of us in the way we should do our jobs to add value every day and embed the behaviours that will be the foundation for our future success.

The new Competency Model places fresh emphasis on customer focus, ethical behaviours, innovation and driving profitable growth. Successful businesses know that the best results come from engaging and inspiring others together with a leadership style that empowers and develops people, and these behaviours are reflected in the new People section.

The new Model was in development throughout 2015 and went through an extensive consultation process to ensure that it is relevant and practical.

To ensure that the Model is owned and used by the business a series of briefings and promotions were carried out to launch the new Model. We will continue to have a number of initiatives throughout FY2018 to encourage people to use the Model and the accompanying materials such as development guides, 360 questionnaires, interactive exercises as well as assessment centres and recruitment & selection support.

#### NSG Group Competency Model



"Leaders are those who are able to engage and motivate our employees (People) and through them achieve short term performance (Results) and long term success (Vision)" It has been two years since we participated in an employee survey and in that period we have launched a number of initiatives within R&D and around the Lathom site as a whole. It is now time for another survey to enable the senior management team to get employees views again. The Pulse Survey has several advantages over the traditional employee survey as results are available much more quickly and we can include a number of the questions specific to R&D."

**Mike Greenall** - Director, European Resource and Auto R&D Programmes

Following previous surveys we have worked hard to improve areas around communication and site management; the results tell us how our employees now feel and what we still need to focus on for continuous improvement."

Fu Jingyan - HR Manager Guilin, China

## COMMUNITIES

## We aim to be a good neighbor, wherever we operate.

We have around 27,000 permanent employees, with principal operations in 28 countries throughout Europe, Japan, North and South America, China and South and South East Asia. We do this in over 500 separate facilities worldwide – some large and some small. Each has an impact on the community in which it is based, by providing employment, investment and other benefits, but also having an impact on the environment.

The local communities throughout the world in which the NSG Group operates are the foundation of our business and the lives of employees. Without a relationship of mutual benefit with these communities, the Group as a whole could not sustain its operation.

The effects of necessary investments on our communities are generally beneficial, bringing additional employment and economic benefits. For every investment we make, an impact assessment is conducted to ensure we understand and manage the likely effects on the community, the environment and the local economy.

As a responsible and often prominent member of the communities in which we operate, we believe it is important to be involved actively by leveraging our core business and management resources to help to address local issues.

#### Aims and objectives

We want our operations to function in healthy, thriving communities and to be seen as a good neighbor to those communities.

We know that if we want to operate effectively and to be able to expand or change when the time is right, we need the goodwill that comes from being an active supporter of the community. In addition to our business investments helping to sustain local operations, we also invest in the communities in which we operate. We aim to help – through direct cash donations to charities and other projects or through in-kind resources – to improve the health of the community or tackle specific social issues. We operate programs that assess and manage the impacts of our operations on communities, including entering, operating and exiting.

We also involve our staff in providing a lead in developing our relationships with the communities in which we operate. This can take the form of matching contributions raised by staff or allowing staff time to make personal contributions of time and effort in local projects.

In FY2015, we made contributions worth around ¥70 million to our local communities. Our grants helped the arts, medicine, welfare, job creation and urban renewal.

### STAKEHOLDERS





Pilkington Automotive India Vizag took an initiation to support the near by village people for a Medical health check up camp and distributed medicine to 200 members of the local community.



The Lathom European Technical Centre hosted a site visit for primary school pupils as part of the Science, Technology, Engineering and Mathematics Network initiative.

They visited the exhibition area, watched a short video presentation and visited the chemical analysis laboratories.



In October 2016 NSG announced that it would be collecting and purchasing goods for the victims of Hurricane Matthew. Several of the Laurinburg employees were directly affected by this hurricane.



A group of volunteers from our Toledo plant in North America gave up a day to help out with a 'Habitat for Humanity' affordable housing project. The faith-based organization builds one or two homes in the County each year, using volunteer labor and sponsorship funding and contributions.

Pilkington Architectural Glass North America is a sponsor and contributed both windows and volunteer labor.



On World Environment Day, our Vizag Automotive plant in India involved every team member in their "Go Green Vision" and planted 240 trees on the company premises

## SUPPLIERS

## Achievement against target by end of 2016



By the end of 2015 we have completed an evaluation on over 280 companies of which over half are fully compliant and a further third meet our minimum criteria. The remainder have been prioritized for further development.

## Ranking supplier risk on the environment Progress 2015-2016



# We aim to build strong mutually beneficial relationships based on trust and co-operation, innovation and sustainability.

We purchase materials, goods and services from over 20,000 suppliers worldwide. Our Supplier Code of Conduct and related evaluations help ensure that our suppliers understand and comply with our standards.

#### **Our Supplier Code of Conduct**

As part of our Sustainable Procurement Program, we operate the programs to ensure compliance with our Supplier Code of Conduct. It outlines behaviours, processes and procedures – in short, the standards we expect from our suppliers. Engagement with suppliers may be via appropriate category account managers and the Procurement function has the responsibility to ensure that suitable engagement arrangements are in place and communicated. Our manufacturing processes use materials, products and services procured from a wide range of regional and global suppliers. Our suppliers are therefore crucial to the achievement of our sustainability objectives. To manufacture and supply superior quality glass products to our customers, we aim to build strong relationships with suppliers that are based on a framework of trust, co-operation and sustainability.

The wide range of issues addressed in the Code reflect the many and diverse activities in which our suppliers are involved. Wherever possible, the Code defines a fair and common sense approach to doing business, while incorporating all relevant legal requirements. The content of the Code also takes into account our Values and Principles, particularly the emphasis on safety, taking personal ownership for our actions and communicating with openness and involvement. It is the responsibility of all of our suppliers to follow the principles of this Code to ensure compliance with our requirements.

Insisting that our suppliers agree to adhere to our Code has influenced who we develop longer-term relationships with as part of our category strategies and who we do not. It has also prioritized which suppliers we need to develop and improve further to ensure full compliance.

#### Supplier Sustainability Evaluation

We continue to make good progress in evaluating more of our suppliers using a combination of internal resource and an external service provider.

In recent years we have implemented a program of identifying suppliers that have a potentially high impact on the environment (categorized as HEI). Our aim is to ensure that our suppliers minimize their potentially negative impacts and work positively on environmental initiatives. The scope covers 13 of our material categories which we now categorize as being of 'High Environmental Impact', including wooden packaging, batch materials, wastemanagement contractors and chemicals. We expect that all suppliers in these categories have a recognized environmental certification such as ISO 14001 or equivalent. In the case of wooden packaging, paper and cardboard, we look for a recognized chain of custody (e.g. FSC or PEFC) in regard to the raw material supply.

#### **Conflict minerals**

The NSG Group supports the goals and objectives of the Dodd-Frank Wall Street Reform and Consumer Protection Act's Section 1502, which aims to prevent the use of conflict minerals that directly or indirectly finance or benefit armed groups in The Democratic Republic of the Congo (DRC) or an adjoining country as defined in the Act.

Identifying suppliers who provide materials that could potentially include these minerals is now a very important part of our procedures and due diligence continues to be completed via an online questionnaire. During FY2016 we implemented an ongoing program to update the data from these suppliers.

### **STAKEHOLDERS**



### Anti-Bribery Anti-Corruption (ABAC)

NSG and its subsidiaries do business with a range of persons and entities in the private sector including but not limited to agents, consultants, distributors, service providers, freight forwarders and customs clearance agents (collectively, "Third Parties"). NSG sometimes engages Third Parties to represent its interests or to interact on its behalf with Public Officials such as customs brokers, lawyers, lobbyists, standards committees, or other intermediary activities. Acting on behalf of NSG is not limited to those situations where the Third Party represents NSG as an attorney-in-fact. It also applies to those situations where they represent NSG's interests whether or not they are interacting with public officials or other entities in the private sector.

We continually review our suppliers in order to identify those suppliers considered to be high ABAC risk. The Group Ethics and Compliance carry out due diligence that includes a questionnaire and screening process. The Third Party may be screened against various lists including sanctions lists, watch lists, PEP (politically exposed persons' lists) and checked for exposure in adverse media.

## OE business in Japan increases long distance transport by rail and ferry and reduced distances driven by road.

Long distance road transport deliveries from our Automotive Glass processing plants in Central Japan to customers in Iwate and Kyushu have been switched from direct road deliveries to an intermodal mix of road/rail or road/ferry. These intermodal systems involve either the transfer of loaded rail containers from a road trailer onto a rail vehicle or the transfer of the road trailer onto a sea ferry for the long haul part of the journey. The impact is to reduce the distance of these transport journeys actually driven over the road and the associated CO<sub>2</sub> emissions for the longest proportion of the distance. CO<sub>2</sub> emissions savings equated to 267 tonnes in 2016 and this equates to a reduction of 49 percent for the transports involved. Overall this represents a reduction of 2.9 percent in the totals CO<sub>2</sub> emissions associated with our transport for the OE business in Japan. These initiatives required new suppliers to be sourced and introduced into our distribution operations.

#### Working with suppliers to save energy

We continue to work with key suppliers to develop projects to reduce energy and water consumption in our manufacturing sites, utilizing their expertise in various technologies to develop solutions to specific energy management challenges.

#### Communication and co-operation

In line with our Sustainability Policy, we communicate with and work constructively with our suppliers and governments, regulatory agencies, the scientific community and other relevant stakeholders to develop and encourage business and community practices that make progress towards the common aim of sustainable development.

## Transport CO<sub>2</sub> Emission Reduction Projects

Transport and Warehousing activities account for 16 percent of the NSG Group's procurement spend across its global operations. Focus is on the provision of safe and on-time service to our plants and our customers by our selected suppliers as well as value for money. In addition, there is a strong emphasis on improving efficiency, reducing empty driven miles and increasing the weight of product carried. All of these initiatives should also improve the Group's impact on the environment by reducing the amount of CO<sub>2</sub> emissions to the air. During the last year, there have been many positive projects delivering environmental benefits and a selection of these is described below.

See page 27 for carbon saving details about a lightweight trailer project in the Architectural European business.



### AGR Business In North America Introduces New Van Fleet and Reduces CO<sub>2</sub> Emissions.

Van replacement strategy for our Automotive Aftermarket business in North America is switching to new smaller City Express vans for deliveries to customers from our network of Service Centres. The first 39 vehicles were introduced during 2016 in what will be a project which will extend over the next few years until the majority of these deliveries will be made in these smaller more fuel-efficient vans.

By changing the loading and glass-securing systems and methods in these new smaller vans, the actual load density per van load has not been sacrificed so there is a real and tangible saving in emissions involved in transporting the same volume of glass.

In 2016, these new vans drove over 655,000 miles saving 190 tonnes of CO2. This represents a reduction in  $CO_2$  emissions of 2.25 percent over the entire fleet; the new vans so far introduced during 2016 represented just 10 percent of the fleet and operated for just six months. The expectation within four years is that the increased use of these new smaller vans will eventually account for up to 60 percent of AGR's van deliveries in North America and an annual saving of around 1600 tonnes of  $CO_2$  can be achieved.

## FURTHER INFORMATION

We produce a regular flow of publications intended to provide current and potential investors with as much information as possible about the group, the industries in which we operate and the organization, strategy, targets and progress of the group.

#### **Publications**

The range of these publications is shown below.

#### Annual Report

In order to obtain a full understanding of the performance of the Group, this document should be consulted.

#### To Our Shareholders

Published twice a year, in June and December, designed to keep shareholders informed of progress against our strategy. Editions in both English and Japanese.

#### NSG Code of Ethics

Produced for Group employees in all of the languages in which the Group operates, summarizing the main points of the Group's Code of Ethics.

#### **Company information**

(as at 31 March 2016)

**Company name:** Nippon Sheet Glass Co., Ltd.

Unified global brand: NSG Group

**Head office:** 5-27, Mita 3-Chome, Minato-ku, Tokyo 108-6321 Japan

**Established:** 22 November 1918

Paid-in capital: ¥116,449 million

Total assets: ¥812,120 million

**Net sales:** ¥629,172 million (consolidated)

**Employees:** 27,463

NSG Group companies: 219

Web: www.nsg.com

Websites NSG Group corporate website (English)

www.nsg.com

**NSG Group corporate website** (Japanese) www.nsq.co.jp

**Commercial website** (Architectural and Automotive) www.pilkington.com

Sustainability contact www.nsg.com/en/contact-us

For information about our GRI index visit http://www.nsg.com/en/sustainability /griindex

