



Integrated Report 2022

Fiscal Year Ended 31 March 2022

Nippon Sheet Glass Company, Limited

NSG
GROUP

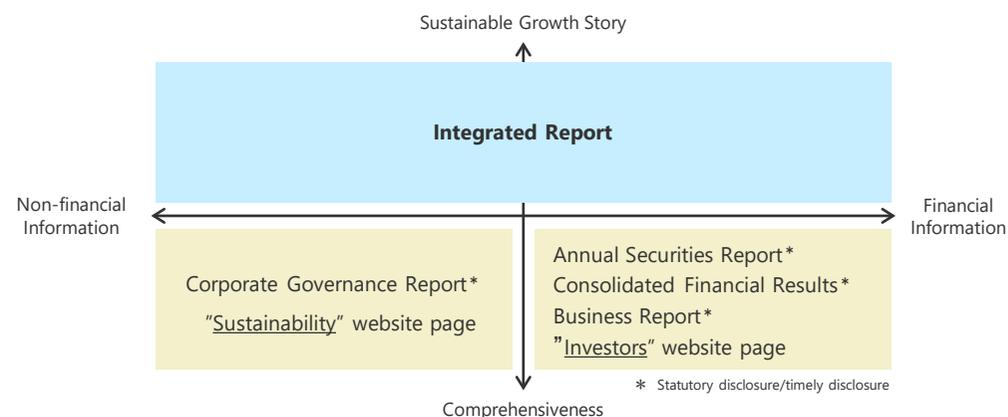
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Editorial Policy

NSG Group started to publish "Integrated Report" since 2018. "Integrated Report 2022" is aimed at describing to our stakeholders how our stated goal of "transforming into a VA Glass Company" would enable sustainable growth through the strengths of our unique technology and products that address social challenges. Also, for the Integrated Report 2022, particular emphasis has been made on how we address and contribute to climate change. Detailed financial and non-financial data can be found in the Annual Consolidated Financial Statements and on our website.

Information Disclosure Structure



Scope of Report

Period Covered: April 1 2021 to March 31 2022

*Some content may include activities after April 1 2022

Organizations Covered: Nippon Sheet Glass Company, Limited and its consolidated subsidiaries

Financial Standards: Financial statements and financial data included in this data after 2011/03 were prepared in accordance with International Financial Reporting Standards.

Forward-looking Statements

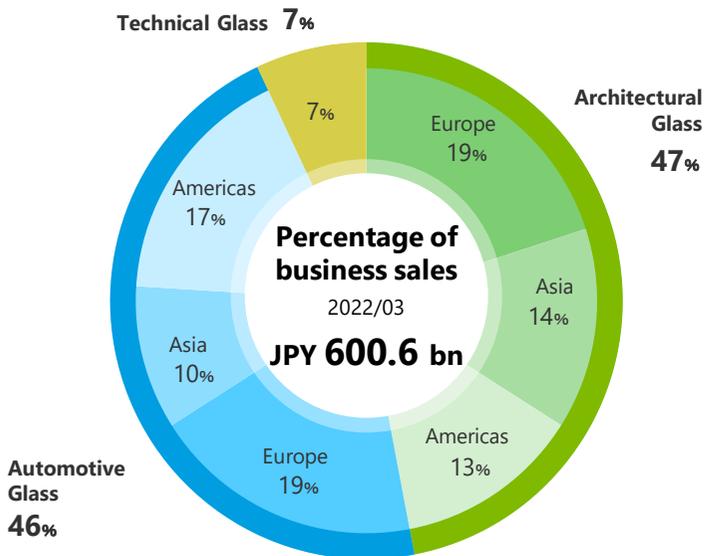
The projections contained in this document are based on information currently available to us and certain assumptions that we consider to be reasonable. Hence the actual results may differ. The major factors that may affect the results are the economic and competitive environment in major markets, product supply and demand shifts, currency exchange and interest rate fluctuations, changes in supply of raw materials and fuel and changes and laws and regulations, but not limited.

NSG Group overview

Three Global Businesses : Architectural, Automotive, and Technical Glass.

The NSG Group is one of the world’s largest manufacturer of glass and have principal operations around the world and sales in over 100 countries.

The NSG Group is striving to realize a sustainable society by offering new values and services with glass swiftly and appropriately to meet the growing needs of our customers and society.



Architectural

Leading supplier for architectural glazing and thin film solar panels

Products

1. Building glass & glazing
2. Glass for solar panels

Features

- 27 float lines operated globally
- Top market share in online coating

Sales percentage by region

エレクトロクロミックガラス
Courtesy of View Inc.

Automotive

Key supplier globally in new vehicle (OE) and automotive aftermarket (AGR)

Products

1. Glazing for new vehicles
2. Glazing for replacement markets

Features

- Key operations in 14 countries
- Supplying glass to world’s leading vehicle manufactures
- The largest global service provider for aftermarket

Sales percentage by region

Courtesy of General Motors

Technical Glass

Unique ‘Number One’ and ‘Only One’ niche products

Products

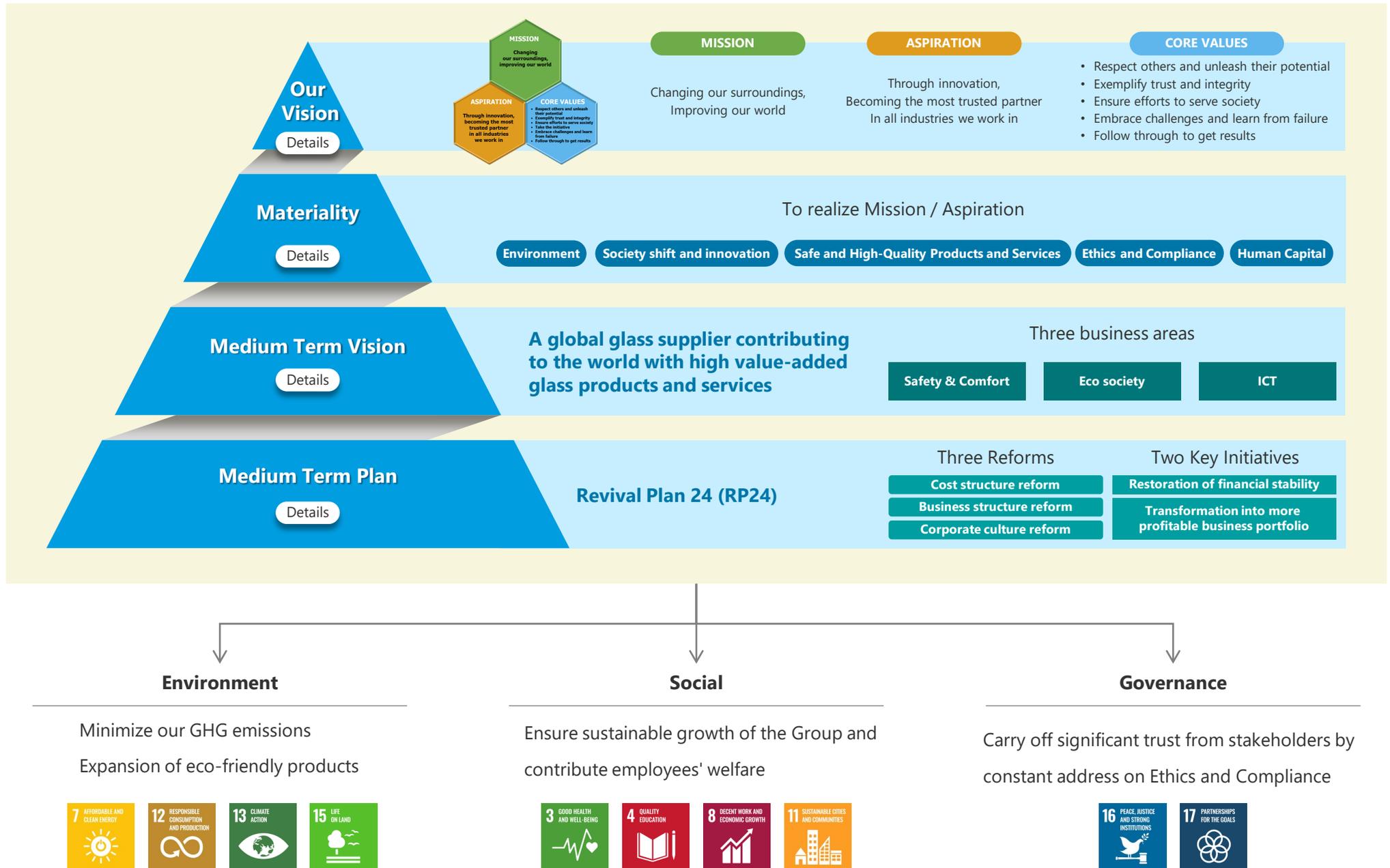
1. Thin glass for display etc.
2. Lenses for printers, telecommunication devices and medical endoscopes
3. Glass cord for car engine timing belt, etc.
4. Glass flakes

Features

- Key operations in Asia and Europe
- Top market share in printer lens

Sales percentage by region

NSG Group's Structure of Strategy



CEO Message



Representative Executive Officer
President and Chief Executive Officer

Shigeki Mori

Q1 How would you evaluate and describe 2022/03?

2022/03 was the year that the Group was forced to respond to new crises, such as supply chain disruptions, energy price spikes and even Russia's invasion of Ukraine, while COVID-19 continued to have an impact in some regions.

The world has entered an era of change. In the coming years and decades, it is important to think of company management with uncertainty as the normal state. The first uncertainty is infectious diseases. The COVID-19 pandemic will probably only come to an end when the world's population acquires immunity. In the meantime, there is a risk of outbreaks of highly virulent mutant strains. The second uncertainty is the destabilization of the international political situation and balance of power. With a gradual decline in the US sphere of influence, international politics is becoming more unstable. This has manifested itself through differences in political outlook between the US and China, and the situation in Russia. The third uncertainty is climate change. Climate change is clearly progressing, as evidenced by the increase in unusual weather events such as record-breaking heat waves and heavy rainfall over the past few years. The fourth uncertainty arises from changes in economic structure. The development of technology is changing the way people work. The emergence of the GAFA (Google, Amazon, Facebook, Apple) economy is emblematic of this change. Industrial structures and business categories are likely to continue to undergo major changes in the future.

I believe that the sustainable growth of a company, which we aim for in our management policy "Our Vision," is not an extension of the past, but a way of overcoming major changes and continuing to grow with new ideas. It has been a year of deep reflection on how the Group can continue to grow in the midst of these major changes.

The Group has already survived several eras of change in the past and through various efforts, it has been able to overcome these periods of change and make great strides as a company. I believe that the main driving force behind this was technological innovation. We should have confidence in this, and it is with this confidence that we will build the future of the NSG Group.

In these eras of change, there are ample opportunities to become a global glass manufacturer that contributes to society with value-added glass products and services through the three areas of contribution (Safety and Comfort, Eco Society and ICT), based on our medium-term vision.

The era of change offers a variety of opportunities to make great strides forwards.

CEO Message

Q2 2022/03 was a first year of the midterm management plan “RP24.” Could you provide any comments on this?

Despite continuing headwinds such as a delay in the recovery of vehicle production, logistics disruptions and rising energy prices, each SBU and region took prompt and appropriate actions. These included headcount reductions following the consolidation of sites and production lines, mainly in the Automotive glass businesses in Europe and the USA. In addition, other urgent profit improvement measures were also taken across the Group’s businesses. “Cost structure reform” which is the one of the “Three reforms” set out in RP24 continues to be implemented with positive results.

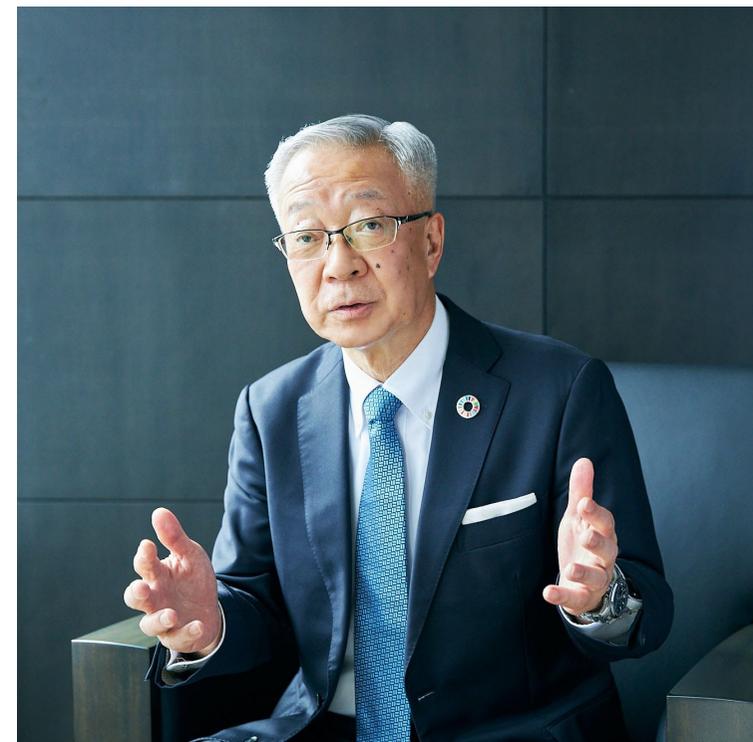
“Business structure reform”, aims to enhance the expansion of value-added business and the development of new high-growth businesses, with an emphasis on investment and asset efficiency. The Group continued to develop its solar energy glass business in the US and Vietnam, which made a positive contribution to the Group’s profit, while at the same time contributes to environmental protection. Adding to that, as part of our environmental initiatives, the Group made good progress with the introduction of renewable energy (Solar and Wind power), and also had trials aiming to commit to carbon neutrality, such as manufacturing glass using hydrogen power and 100% biofuel. Also, we have declared that we will achieve carbon neutrality in 2050. The Group thinks of it as a common issue for all humanity, and it is a natural social responsibility for a glass manufacturer which is a

carbon-intensive company. At the same time, it is an important opportunity for the company to contribute to society and realize sustainable growth through the provision of products and technologies, and we have set ‘Eco Society’ as one of the three areas of contribution under our medium-term vision. For Scope 1, we will introduce alternative fuels, alternative raw materials, carbon capture, etc. For Scope 2, we will increase our procurement of renewable energy sources, and for Scope 3, we will work with our suppliers to reduce CO₂ emissions and achieve our CO₂ reduction target for 2030 (30% reduction compared to 2018), which has already been certified by SBTi*. The entire company is currently working to achieve carbon neutrality by 2050.

Regarding “Corporate culture reform”, which values “customer focus”, “swift decision making and action” and “overcoming difficulties”, and transformation into a company that never fails to take up challenges and follow through to deliver results, the Group strengthened communications between its most senior management and other employees. New communication styles have been established, such as holding town hall meetings using remote meeting systems.

With regard to transformation into a more profitable business portfolio which is one of “Two key initiatives”, the disposal of the battery separator business was completed during the year, while promising products such as

electrochromic glass and coating products based on sol-gel technology (antibacterial and antifogging), were expanded as online coating products other than glass for solar energy panels. In addition, the Group was successful in creating a new composition glass fiber (MAGNAVI™).



*SBTi is a partnership between CDP, UN Global Compact, WRI (World Resources Institute) and WWF (World Wildlife Fund), which helps companies set the science based goals for reducing GHG emissions to prevent the impact of climate change.

CEO Message

Q3

Unlike the other Three reforms or Two key initiatives, "Corporate culture reform" does not directly lead to financial improvements for the company. Could you tell me the background of why this reform is included in the three reforms?

This is because of our belief that the Group must not only improve the financial aspects of our business, but also the non-financial aspects of the business. I believe that the starting point for improving our corporate value in non-financial terms is the development of human resources and the reform of our corporate culture. The Group is an upstream industry and tends to be far away from end-users and end markets, which means that customer-

thinking and market orientation are not always firmly rooted in the minds of our employees.

In the past, there were cases of insufficient communication among SBUs and head office functions. For example, a customer of the Automotive business unit had a large building investment, but the information was not passed from the Automotive glass business to the Architectural glass business through internal channels, and the

Architectural glass business won the project based on information obtained through a different route.

We need to become more customer and market-oriented to achieve sustainable growth. We also need to increase the speed of decision-making and business decision execution. I want to develop human resources that can drive drastic changes, so that was the reason why "Corporate cultural reform" is included in the three reforms.

Q4

As mentioned above, town hall meetings have been held to stimulate two-way communication between management and employees (across regions and divisions) in 2022/03 as one of "Corporate culture reform" measures. Could you provide a review or your impressions on this ?

Town hall meetings have been held multiple times with employees employed in various roles globally last year. The number of participants in some meetings reached around 200!

Since it was the first year we introduced town hall meetings, I cannot deny there was a sense of awkwardness at the beginning of the meetings. However, even employees who had tended to be passive in the past began to express their opinions through the town hall meetings, and at times they even expressed critical opinions about management that would not normally be heard. I am satisfied that I could strongly feel employees'

passion and desire to change themselves and to understand what management is trying to achieve from the meetings, even though they were held remotely. Although it may take time to develop human resources, we believe it is important to continue dialogue and promote 'corporate culture reform' through town hall meetings and other means.

At the same time, we want to enable each employee to have a concrete image of the kind of company they want to work for. We believe that this will lead to positive actions in line with our customer and market orientation, which in turn will lead to favorable results.



CEO Message



Q5 What are your thoughts for 2023/03?

2023/03 is likely to be a year of uncertainty and instability, both economic and political. The Group will need to respond in a number of ways that differ from normal times. I will explain the risks that are expected to be of particular significance and also a brief summary of our proposed policy to address them.

First, we will continue to address the basics of our business activities (safety and health, ethics, human rights, environmental matters, and human resources development). We will also promote the recovery of increased raw material and fuel costs with higher sales prices, as well as risk management throughout the supply chain (raw material procurement, CO₂ reduction, waste reduction, management of contractors, etc.). Stricter cash management (reduction of wasteful expenditure, optimization of inventories, stricter capital investment) will also continue.

For preparing for risks, it is important to be prepared to respond quickly to changes as they occur. Rather than spending energy trying to predict change, we need to constantly simulate how we will respond to change as it happens.

As a challenge for growth, I also want to make the Group actively engage in digital transformation (DX). DX is not just about technology, it is about changing the way we work and cultivating the future of our company. For example, new technologies allow us to communicate quickly and accurately with people all over the world and have changed the way of

working. We must take advantage of these new technologies. Specifically, I want to use data and digital technology to streamline our operations, organization and processes to establish a competitive advantage, and to provide customers with more value-added products and services. In other words, I want to use digital technology to streamline operations and utilize the resources generated to provide added value to customers.

To sum up, in this era of change, 'digital' will be the key to innovation. I believe that using the tools of 'digital' to transform companies, in other words, to innovate, is the way to win. It is human ingenuity and imagination that enables 'innovation' to create new things from scratch. The introduction of robots and AI is necessary and brings changes, however, they don't innovate something themselves. I believe that it is the ingenuity and intuition of people working in the company drives innovation. I have particularly high expectations of those in the digital native generation to accelerate innovation.

In this context, human resources play an important role with regard to achieving RP24. Human resource development takes time, but we will continue to focus on it from a long-term perspective.

We will continue to work on the completion of RP24 and become a strong business structure that can achieve sustainable growth. We look forward to the continuing support and encouragement of our stakeholders.

NSG Group’s Business and Strength

Architectural glass business

Products

Architectural glass
 solar energy glass
 value-added glass for industrial applications

Market Conditions

Although there is firm demand all over the world, especially in Europe, the business is significantly affected by input cost rises. Commodity glass will continue to be affected by market conditions, however high value-added glass will expand against the backdrop of tougher environmental regulations and increasing awareness of health. Also at the same time, demand for solar energy glass will remain solid with increasing shift to renewable energy. Adding to that, demand for value-added glass for industrial application will grow.

Business Direction

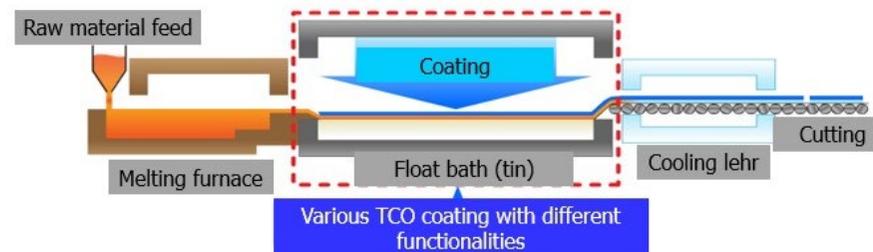
The Group aim to secure returns on the strategic investments decided and executed such as sales expansion of solar energy glass and starting operation of the new float furnace in Argentina. Also, we are aiming to accelerate the shift from commodity glass to value-added products such as adding value through proprietary technologies for example online coating and sol-gel coating and developing new markets by identifying and collaborating with third

parties. Besides aiming at the expansion of new products sales and business performance, the company will also accelerate actions on decarbonization following the world's first successful experiments in hydrogen and biofuel-based Architectural glass production in 2022, to provide a more concrete path towards achieving carbon neutrality in the future at an early stage.

NSG Strength~ Online coating (CVD) technology

Modern glass has far more functionality than ever before. Whilst traditionally extra functionality may have been achieved by making changes to the glass composition or surface structure, today a lot of this additional functionality comes from coatings on the surface of the glass. One of our unique technologies for coating glass surfaces is on-line CVD (chemical vapor deposition). This is a technology that incorporates on-line coating into the float glass manufacturing process and uses a chemical reaction that utilizes the thermal energy of the glass to deposit a strong

film on the glass surface and the Group have total 7 floats (3 in the US, 1 in UK, 1 in Germany and 2 in Vietnam) with on-line CVD coaters around the world. It is energy-saving and mass-producible as it is produced during the glass manufacturing process, and the film is also highly durable and can be subjected to secondary processing. These technologies are used to produce a range of products such as glass with transparent conductive coatings (NSG TEC™), antibacterial glass (SaniTise™, VirusClean) and highly reflective glass (MirroView™).



NSG Group's Business and Strength

Architectural glass business

Glass for solar energy

The NSG Group offers a range of specialized glass and coated glass products used in all of the leading solar energy technologies, including thin film photovoltaics, concentrated solar power technology and solar thermal collectors. The Group is the world's leading supplier of high quality TCO (transparent conductive oxide) coated glass, with manufacturing sites in all major regions and the ability to handle high volumes. These glasses are produced by a patented chemical vapor deposition (CVD) process and are very durable with a wide range of applications.

■ Glass for thin film solar panel

The company supports the spread of photovoltaics in the field of 'thin-film photovoltaic modules', which use a thin transparent conductive film deposited on glass.



Courtesy of First Solar Inc.

Eco-friendly products

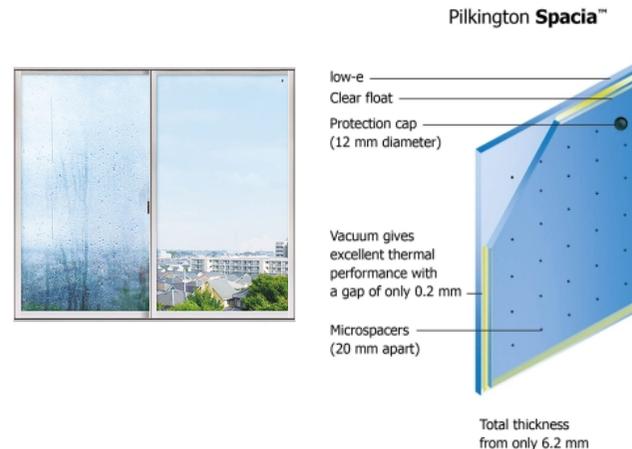
Our architectural products play a vital role in improving energy efficiency and reducing CO₂ emissions.

Insulated glazing

It is said that more than a quarter of the energy consumed in a house is for heating and cooling, and window glass, which makes up a large proportion of a building, is a pathway for indoor and outdoor heat. We aim to meet the growing needs expectations for contributing to the global environment by manufacturing glass that reduces the transmission of heat in and out of windows while making the interior more comfortable and contributing to the reduction of CO₂ emissions.

■ Pilkington Spacia™

Spacia can reduce energy consumption by approximately 40% compared to single glazing.

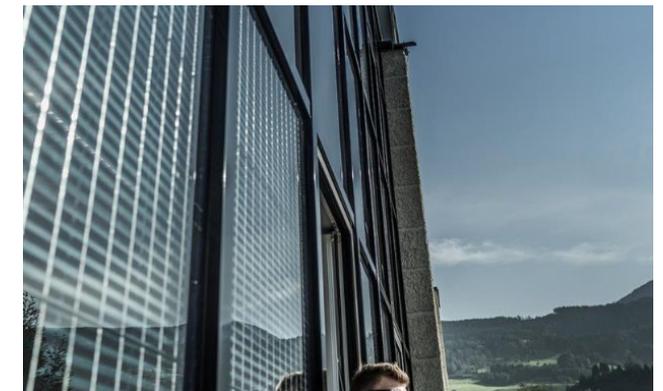


BIPV

BIPV stands for Building Integrated Photovoltaics and refers to a building component which has been enhanced to perform as a renewable energy generating material in addition to being an integrated part of the architecture and building façade. Examples include windows, sunshades, spandrel glass and skylights.

■ Pilkington Sunplus™

It provides power generating, architectural glass solutions for both vertical and horizontal applications, allowing building proprietors and developers to turn buildings into power-generating assets.



Photography: www.johannesfelsch.com

NSG Group's Business and Strength

Automotive glass business

Products

Automotive glazing for new vehicles (OE) and for replacement markets (AGR)

Market Conditions

Whilst consumer vehicle demand remains strong, shortages of components including semiconductors effect vehicle build at car manufacturer. Also, the business is affected by rising raw materials and energy costs. Vehicle production volumes in the Group's main markets are not expected to recover to the pre-pandemic levels during RP24. Speaking of rapid development of CASE, it will cause significant changes to the auto industry supply chain which leads to increase demands for windshields with HUD, glass antenna for 5G and solar control coating on glass for EV. CASE will also increase its importance in the AGR business.

Business Direction

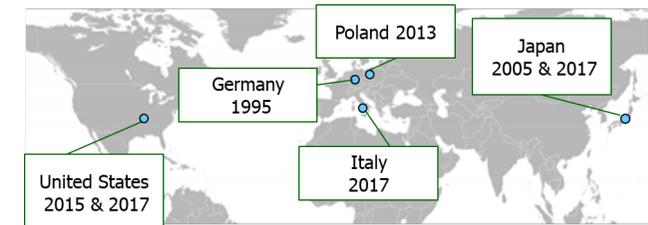
The Group focuses on four strategic directions. Drastic cost structural reform including consolidation of manufacturing and logistics sites, optimizing of capacity utilization with improved productivity and flexible manufacturing and minimization of logistics cost through re-examination.

Promoting price pass-through in response to input cost rises. Expansion sales of value-added products by leveraging the Group's proprietary technologies especially advanced windshields. Also, strengthen the sales and distribution network in the AGR business.

NSG Strength

Since 1995, the Group began installing APBL*1 equipment and were among the first to establish a global production system. Laminated glazing is used for windshields to prevent from shattering for the safety of the drivers and passengers. There is a growing need for high-precision windshields for ADAS*2 and HUD*3, and APBL manufactures them to function ADAS and accurately project HUD images.

Installation of APBL



*1 APBL: Advanced Press Bending for Laminated Glass

*2 ADAS: Advanced Driver Assistance System

*3 HUD: Head Up Display

Windshields with ADAS and HUD

High-precision windshields processing technology is required to ensure that ADAS functions accurately, preventing accidents and projecting speed and navigation.



NSG Group's Business and Strength

Automotive glass business

Eco-friendly products

Eco-friendly glass demand is increasing with the background of the growing importance of environmentally-friendly vehicles. The Group's lightweight designs and solar control glazing are the ways we are able to contribute to reduced CO₂ emissions and improve the overall energy efficiency of the vehicles we drive.

Lightweight Glazing

Weight saving in vehicles helps them to achieve their CO₂ emissions targets as well as or an increased range for electric vehicles. It is possible to achieve a 40% weight reduction in the glass component while also maintaining its solar and acoustic performance with no additional risk from debris impacts. The Group will continue to meet the growing demand for vehicles that are expected to reduce environmental impact such as EV.



Solar control glass

Approximately 30% 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 reduced energy consumption and CO₂ output.



NSG Group's Business and Strength

Technical glass business

Products

Thin glass, Optoelectronics products, specialty glass fiber products

Market Conditions

Demand for Technical glass business is recovering from COVID-19 impacts. From a medium and long-term perspective, the advancement of a highly information-oriented society will increase demand dramatically for products related to storage and high-speed and large-capacity communication. At the same time, the need for compact, high-precision optical components is expected to increase due to the penetration and expansion of image-sensing technology to FA equipment, logistics robots and drones.

Business Direction

We will develop highly unique products that meet changing market needs, particularly in ICT. Furthermore, we will develop our technological base with an eye on changing market needs, acquire a new customer base through the development of new applications and the

introduction of new products, and accelerate the actual commercialization of new products, while also looking to accelerate the creation of new businesses through bold alliances. The Group is continuing to pursue a niche-top strategy to promote business growth.

NSG Strength

Glass properties including "transmit light", "light and strong", and "non-conductive" are leading to innovative designs by engineers. Some products maintain a high market share such as lenses for printers and glass cords. NSG will continue to build its future with its clients as the pioneer of high-performance glass materials.



SELFOC® is a gradient-index lens with a flat end face. It has already been adopted as an optical component for products in a wide range of fields, including printers and optical communication devices. NSG Group is looking ahead to expand into various markets and future applications.

NSG Purity

SIAA
ISO 22196
Anti Bacteria
Inorganic, glass surface coating
JP0122815X00018

SIAA
ISO 21702
Anti Virus
Reduces the number of specified viruses on the product.
Inorganic, glass surface coating
JP0612815X00026

In addition to its antibacterial and antiviral performance coated with unique technology, effective both in light and in dark, NSG Purity™ demonstrates high durability and transparency.

NSG Group's Business and Strength

Technical glass business

Eco-friendly products

Glass is versatile and ubiquitous, and plays a very important role in many aspects of our lives.

Glass flakes and fibers

NSG contributes to create a sustainable society through environmentally friendly manufacturing and application in environment-related technology and CO₂ reduction by weight reduction of components. Product development and manufacturing is carried out with due consideration to the selection of raw materials with low environmental impact and the reduction of energy use and CO₂ emissions during production.

High modulus, high strength glass fiber MAGNAVI™



It takes into account not only climate change, but also the environment in general, as it does not contain rare earth elements that may bring environmental risks such as radioactive contamination during mining and refining.

Glass cord

Glass Cord is a glass fiber product with NSG's proprietary technology to reinforce rubber and resin products. As well as improving the elasticity, durability, and dimensional stability of belts, these strong, and bendable stretch-resistant cords also help to achieve drive systems that are kinder to the environment and save energy.



Glass Cord is a reinforcing cord processed with a special adhesive and used in rubber and plastic products. Glass Cord is made by applying a special adhesive treatment to high-performance long fibers, usually but not exclusively, glass fibers.

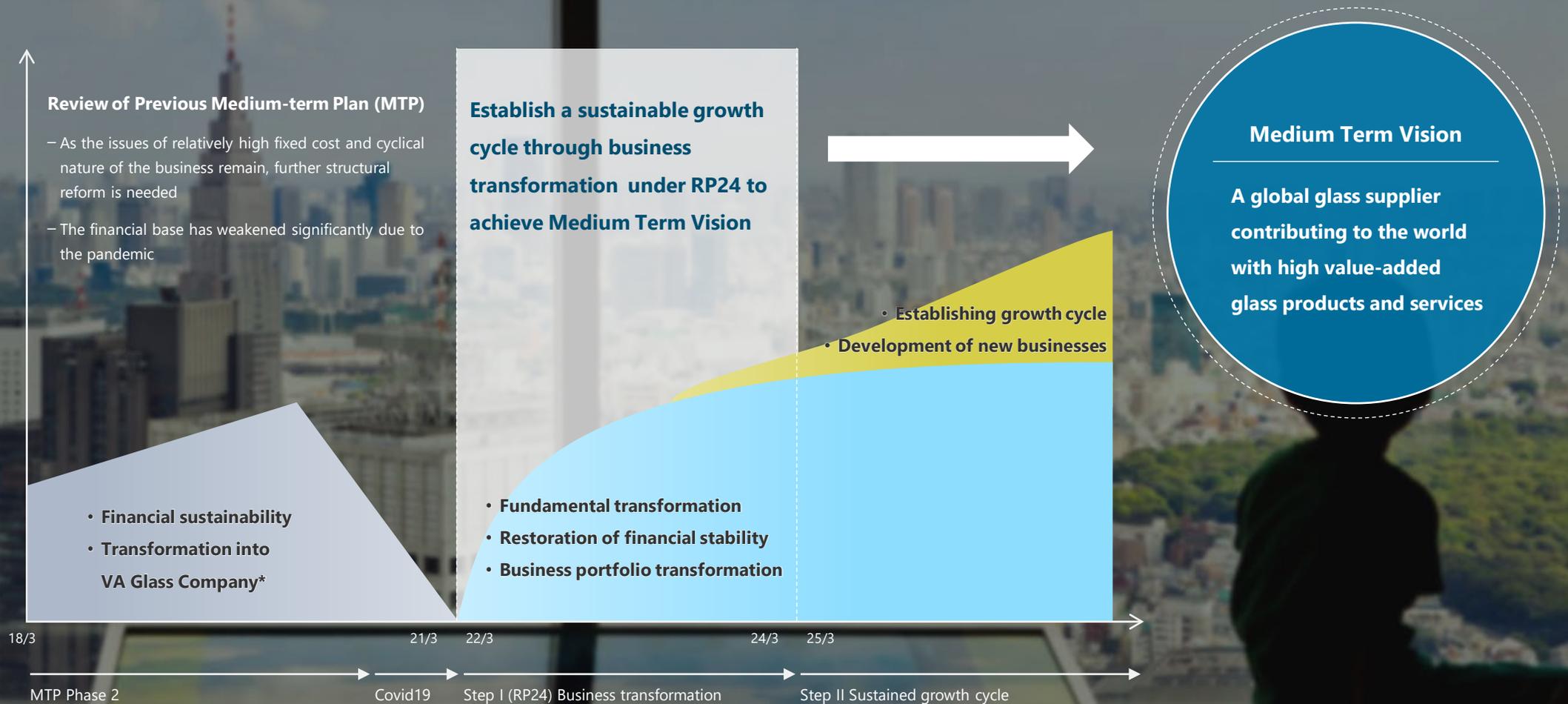
Financial Highlight

		2018/3	2019/3	2020/3	2021/3	2022/3	
Consolidated Income Statement (million yen)	Revenue	598,897	612,789	556,178	499,224	600,568	
	Trading Profit	35,632	36,855	21,177	13,067	19,980	
	Profit before Taxation	22,146	22,730	-13,549	-17,171	11,859	
	Profit Attributable to Owners of the Parent	6,164	13,287	-18,925	-16,930	4,134	
	Trading Profit Ratio to Revenue	5.9%	6.0%	3.8%	2.6%	3.3%	
	Profit Attributable to Owners of the Parent Ratio to Revenue	1.0%	2.2%	-3.4%	-3.4%	0.7%	
	ROE	4.6%	10.7%	-25.7%	-26.9%	2.8%	
	ROA	4.7%	5.1%	3.0%	1.8%	2.4%	
By Business Segment (million yen)	Revenue	Architectural	237,966	247,348	233,687	215,501	281,816
		Automotive	311,428	314,645	280,977	245,184	276,246
		Technical Glass	48,429	49,106	40,143	36,818	39,770
		Others	1,074	1,690	1,371	1,721	2,736
	Trading Profit	Architectural	26,246	25,811	17,331	15,670	28,130
		Automotive	14,209	15,118	6,100	1,802	-7,908
		Technical Glass	5,403	8,062	7,116	6,707	9,907
		Others	-10,226	-12,136	-9,370	-11,112	-10,149
	Profit Ratio to Revenue	Architectural	11.0%	10.4%	7.4%	7.3%	10.0%
		Automotive	4.6%	4.8%	2.2%	0.7%	-2.9%
		Technical Glass	11.2%	16.4%	17.7%	18.2%	24.9%
	Balance Sheet (million yen)	Total Assets	788,592	761,869	765,197	824,963	939,281
Interest-bearing Debt		372,654	371,508	435,007	471,710	467,885	
Net Debt		306,471	317,700	390,169	411,771	365,173	
Shareholders' Equity		135,192	123,760	73,612	62,937	145,291	
Shareholders' Equity Ratio		17.1%	16.2%	9.6%	7.6%	15.5%	
Cash Flows (million yen)	Cash Flows from Operating Activities	34,716	29,030	30,444	21,053	45,061	
	Cash Flows from Investing Activities	-17,912	-28,143	-56,888	-25,589	-22,787	
	Free Cash Flow	16,804	887	-26,444	-4,536	22,274	
	EBITDA	63,564	64,732	55,023	46,837	56,651	
	Net Debt/EBITDA	4.8	4.9	7.1	8.8	6.5	
	Capital Expenditure	-35,512	-32,150	-66,971	-43,347	-28,629	
	Depreciation & Amortization	29,436	27,910	34,842	35,768	36,675	
Per Share (yen)	Earnings per Share	48.3	115.2	-236.0	-208.3	24.1	
	Book Value per Share	1,042.7	978.5	470.9	349.6	1,256.0	
	Cash Flow per Share	185.7	9.8	-291.7	-49.9	24.5	

Medium Term Plan "Revival Plan 24 (RP24)" Overview

Roadmap to Achieve Medium Term Vision

Launch of new three-year management plan, Revival Plan 24 (RP24)



* VA: Value-Added

Medium Term Plan "Revival Plan 24 (RP24)" Overview

Revival Plan 24 (RP24) – Outline

Committed to the three reforms and two key initiatives to build business strength

RP24 Policy	<ul style="list-style-type: none"> – The Group will accomplish drastic and fundamental initiatives, revising the business strategy reflecting the changes in the business environment – RP24 is the period for business transformation and the Group will focus on drastic reform of profit structure, restoration of financial stability and transformation of business portfolio
RP24 Initiatives	<ul style="list-style-type: none"> – Under RP24, the Group commits to the following Three Reforms and Two Key Initiatives <p>Three Reforms</p> <ol style="list-style-type: none"> 1. Cost structure reform: cost reduction and productivity improvement 2. Business structure reform: expansion of value-added business; development of new growth businesses; emphasis on investment and asset efficiency 3. Corporate culture reform: never failing to take up challenges and following through to deliver results <p>Two Key Initiatives</p> <ol style="list-style-type: none"> 1. Restoration of financial stability 2. Transformation into more profitable business portfolio
Sustainability	<ul style="list-style-type: none"> – Work on improvement of existing technology and development of new technology aiming for carbon neutrality in 2050

Financial Targets

Aiming to recover the equity ratio to at least 10% at the earliest opportunity with stable net profit and free cash flow. Over the medium to long term, the Group will opportunistically consider ways to further improve its financial foundations

(JPY)	21/3	24/3 Target
Operating Profit Margin ^{*1}	2.6%	8%
Net profit ^{*2}	(16.9) bn	> 30 bn cumulatively for 3 years
Equity ratio	7.6%	> 10%
Free cash flow	(4.5) bn	> 10 bn

*1: Operating profit after amortization

*2: Profit attributable to owners of the parent



Profitable business to generate stable free cash flow

Constant net profit generation to restore equity ratio of more than 10 percent

Medium Term Plan "Revival Plan 24 (RP24)" Overview

Transformation Initiatives under Revival Plan 24

Initiatives underway for business to grow sustainably according to RP24.

Achieved in shareholder's equity ratio and free cash flows among the financial targets as a single year

Three Reforms

(1) Cost structure reform

- Headcount : Consolidation/Closure of sites/production lines mainly in Automotive business in Europe and Americas. Approximately 1,000 reductions in 2022/3, resulting in 2,340 since 2020/3 end (JPY 13.6 bn reduction vs 2020/3)
- Non headcount : Direct costs savings of JPY 5.0 bn in 2022/3 via Kaikaku and Kakushin activities
- JPY 6.8 bn cost reduction in the additional initiatives in Automotive business

(2) Business structure reform

- Contribution to profit and CO₂ reduction by solar energy glass furnace in the USA and Vietnam
- New float furnace construction in Argentina for full operation in H2 of 2023/3
- Test of transparent solar panels for use as windows
- Trial becoming the world's first flat glass manufacturer to fire furnace using hydrogen or 100% biofuel

(3) Corporate culture reform

- Encouragement of communications through holding a number of dialogues with the top management (townhall meeting)
- Enhancing "Inclusion & Diversity (I&D)" activities globally to improve manager gender diversity and accelerate development of next generation

Two Key Initiatives

(1) Restoration of financial stability

- Turned profit before tax and net profit. Significant improvement of net profit by JPY 21.1 bn and free cash flow by JPY 27.0 bn from 2021/3.
- Progress towards the financial targets is below. Achieved in equity ratio and free cash flow as a single year

(JPY)	Target	2022/3 Actual	Achievement
Operating profit margin*1	8%	3.3%	-
Net Profit*2	> 30.0 bn cumulatively for 3 years	4.1 bn	-
Equity ratio	> 10%	15.5%	○
Free cash flow	> 10.0 bn	22.3 bn	○

*1: Operating profit after amortization

*2: Profit attributable to owners of the parent

(2) Transformation into more profitable business portfolio

- Disposal of Battery Separator business completed on 1st September 2021

CFO Message



Senior Executive Officer, Chief Financial Officer

Reiko Kusunose

Q1

Could you provide a review and comment on the Financial Year ended 31 March 2022 mainly focusing on the financial aspects as CFO?

The Financial Year ended 31 March 2022 result was satisfactory. Whilst the full-year forecast was revised downwards once during the year, the Group achieved its final full-year forecast of an operating profit of JPY 20.0 billion. The consolidated net profit for the period returned to the black for the first time in three financial years, despite headwinds from the high cost of raw materials and fuel, mainly natural gas in Europe, as well as restrictions on vehicle build at our automotive customers.

It was also a year in which the Group became more resilient to changes in the external environment, such as soaring fuel and raw material costs. The Group's cost reduction efforts, together with sales price increases in the Architectural glass business, and the start of price increase negotiations in the Automotive glass business, helped mitigate such external factors.

In terms of performance by business segment, it was a year in which the relative strengths and weaknesses of each business became more pronounced. In the Architectural glass business the market environment was supportive and the Group introduced an energy surcharge system in Europe, in addition to a similar mechanism already in use in North America. This has enabled the business to recover costs associated with rising energy. In the Automotive glass business, there was a real sense that the challenging business environment and the problems with the business structure were more apparent. We are aware that the Technical Glass business is an increasingly important business for the Group, being very strong in terms of its

operating profit ratio, although the scale of this business is not as large as the Group's other two business lines.

In addition to the soaring input costs, particularly with respect to natural gas in Europe, and the restricted levels of vehicle build, the Group's results were also negatively impacted by an impairment loss of approximately JPY 6.8 billion with respect to the Group's Russian Joint Venture operations. This reminded us that risks can exist anywhere as we operate business globally.

The Group mitigated the rising cost of energy during the year through a policy of active risk-based hedging. These hedging activities substantially reduced the energy costs that the Group may otherwise have experienced.

The Automotive glass business faced unprecedented levels of change. Against a backdrop of soaring raw material and fuel costs, as well as supply chain problems that have stalled vehicle production, we have started negotiating price increases with vehicle manufacturers. This is a very significant breakthrough, and from a broader perspective, I feel that the automotive industry itself is at a major turning point. In the light of this, we as glass manufacturers need to rethink our business value. Glass is essential, even if the CASE of vehicles expands. For the successful business, we will continue price improvement negotiations with car manufacturers to mitigate cost increases. I see this as a time when we must further improve our technological capabilities, such as by reducing weight and increasing functionality for EVs.

CFO Message

Q2

The Financial year ended 31 March 2022 was the first year of the medium-term management plan, “Revival Plan 24 (RP24),” and in the year, the Group achieved RP24’s financial targets for the equity ratio (above 10%) and also for free cash flow (above JPY 10.0 bn) as well. Could you give some review and comments on these?

To be honest, we were not able to achieve the equity ratio target only through our business operating activities, as we were also helped significantly by valuation gains on energy hedges as a result of rising energy prices globally, and also by foreign exchange factors.

However, we are relieved to have achieved these targets, not only with an equity ratio above 15%, but also by recording a free cash flow of JPY 22.3 billion which reflected company-wide efforts to optimize working capital levels and control capital expenditure.

We still have a lot of actions to take to achieve our operating profit margin target (above 8%) and profit attributable to owners of the parent (above JPY 30.0 billion cumulatively by 2024/03). In the Architectural glass business, which recorded about a 10% operating profit margin, we should vigorously pursue sales of value-added

products, so as not to rely unduly on glass for solar panels. In the Automotive glass business, we have not yet fully optimized our production facilities and consequently have an element of excess capacity in some areas. We aim to improve our operating profit margin by optimizing these facilities, pursuing cost reduction activities, further driving the expansion of value-added products and achieving price increases.

As for the Technical Glass business, despite its relatively small scale it has already been able to achieve a high operating margin of approximately 25% in 2022/03. We intend to accelerate the growth of this business through the launch of new products and other measures.

The first year of RP24's performance (2022/03) was an encouraging start, especially as the contribution of Architectural and Technical Glass businesses recovered

from the COVID-19 impact earlier than expected. The recovery in these results was partly helped by the business environment and, of course, the effects of the cost-saving efforts we have taken since 2021/03 as a “cost structure reform”, such as direct cost and headcount reductions, have also contributed. The transformation of the business environment has been rapid, for example through input costs soaring much more quickly and significantly than expected. However, the Group has strengthened its resistance to negative shocks in the external business environment, which proves we are taking appropriate measures. There is no need to be unduly pessimistic at this point, and we will continue to push ahead with key measures to achieve the RP24 target at the end of 2024/03.

Q3

What is the Group aiming to achieve in 2023/03 as the second year of RP24?

The full-year forecast for 2023/03 is an increase in revenue but a decrease in operating profit. I would have preferred to make a full-year forecast with increased sales and profits, however, the decrease in profits forecast for 2023/03 takes into account the uncertain business environment, including energy supply concerns, worldwide global inflation trend with further input cost increases, and potential recessionary conditions.

To achieve the forecast for 2023/03, I understand that an improvement in the Automotive glass business is an urgent issue. The Architectural glass business will continue to strive to secure profits by generating sales price improvements, aiming to offset higher energy prices. The Technical Glass business's performance is also quite strong so far. We will continue to work on the three pillars of adding value, improving prices and reducing costs while

maintaining plant operations to achieve our full-year forecasts. We aim to turn the Automotive glass business back to a sustainable profit, which will be a significant element in the achievement of the RP24 operating profit margin target and profit attributable to owners of the parent at the end of 2024/03.

CFO Message

Q4

There are perspectives that capital investment for future growth can be increased because the Group already achieved RP24 targets regarding equity ratio and free cash flow. What is your view on the selection of capital investment, and how you plan to proceed with investment and development to achieve carbon neutrality by 2050?

Whilst the free cash flow in 2022/03 was significantly positive, the Group has a large amount of debt which it must also repay in due course. With regard to capital expenditure, as we have done in the past, we will continue to focus on investment efficiency and allocate our capital expenditure to the growth areas of our business.

To achieve carbon neutrality in 2050, we are working on what we can implement internally. For example, we are introducing the best environmental measures that can be

foreseen at the moment when conducting cold repairs of float furnaces, and we are also trying to implement electric melting of glass, which reduces carbon dioxide emissions. In the field of R&D, we are doing everything we can as a company, including successful combustion experiments using hydrogen and biofuels in the UK in 2022/03. We will continue to make firm commitments to the investments and developments we can make as a company and aim to achieve our Scope 1, 2 and 3 CO₂ reduction targets for

2030 (30% reduction compared to 2018).

As for achieving carbon neutrality by 2050, the measures that one company can do is very limited, as it will require innovation in technological goods and infrastructure. The fuel distribution infrastructure needs to be in place before products can be produced using hydrogen fuel or biofuels, and it will be essential for governments, authorities and the industry as a whole to work together to develop this infrastructure.

Q5

What are your thoughts on the growing expectations of redemption of Class A shares?

It is urgent to redeem the Class A shares since the burden of paying preferred dividends on Class A shares is large. However, we also have a large amount of debt and I believe it is very important to first build up profits and cash flows steadily to strengthen the financial base in order to find the right balance between repaying the debt and redeeming the Class A shares.

Q6

We have received many comments from investors about the recent low share price and the continued non-dividend payments. What do you think is needed to improve the share price and revive dividend payments?

Investors invest in equities which offer an income (dividends) and capital gains (share price appreciation).

The share price is "a report card" for the company so showing its sustainable growth and story is important. The company will prioritize improving its performance. Investors can then realize that the company's performance is recovering and have high expectations that it will grow and look interesting. In the current financial year, we will continue to aim to achieve our performance targets despite the unforeseeable market environment.

We regret very much that we have not paid a dividend during recent years, and we hope to recover our financial

base and reinstate that dividend as soon as possible. From conversations with investors, we feel the strong expectations from them that in the short term the company should be able to improve the Automotive glass business and grow its other businesses to become a continuously profitable company. In the medium to long term, the company must improve its financial base, further improve its equity ratio and restore dividends to become a company that is recognized and respected by the market. We will continue to build up profits and cash flow through cost improvements based on RP24 and strive to meet the expectations of our stakeholders including investors.

Special Feature: Carbon Neutrality Goal by 2050



Q1: NSG Group increased the Carbon Reduction Target by 2030 and committed to achieve carbon neutrality by 2050 in May 2022.

Why have we modified the 2030 target (Scope 1, 2 &3) to 30% reduction of CO₂?

David Cast (DC): That is all down to the different climate change scenarios of the science-based target initiative (SBTi).

There used to be three scenarios and we had a former target that was placed against a 2-degree warming scenario. This means global warming would be set to below two degrees versus the pre-industrial level. But then it was recognized by society in general, that this was not an aggressive enough target. And therefore, a sort of best practice in this area is to follow the 1.5-degree scenario

followed by the IPCC (Intergovernmental Panel on Climate Change.)

However, when we investigated the 1.5-degree pathway, it was just felt that for the Group as an energy-intensive manufacturing company, it was very difficult to set such an aggressive target in the timescale that is required. Just as an indication, if we did follow the 1.5-degree pathway, that would be a 50% reduction in our CO₂ emissions by 2030. While we could identify a potential pathway to achieve such a reduction, it just felt financially unsustainable to

achieve that target. Therefore, we set the ambition at the well below 2-degree transition pathway, which is a 30% reduction.

- Scope 1** Direct emissions by business operators (Use of fuel in manufacturing processes, etc.)
- Scope 2** Location: Indirect emissions by consumption of energy sources (Purchased electricity used in manufacturing processes, etc.)
- Scope 3** Value chain emissions including both upstream and downstream of the organization's activities

Special Feature: Carbon Neutrality Goal by 2050

Q2: Why has NSG Group committed to Carbon Neutrality by 2050?

DC: There are four main reasons the Group committed to become Carbon Neutral in 2050.

First is the vision, the mission and the aspiration of the NSG group, "changing our surroundings, improving our world." As an energy and carbon-intensive manufacturing company, it is important for the Group to reduce the impact of our own corporate activities to improve our world, as climate change action has become a common challenge for humanity today. To society, we cannot hide from the fact that we are an energy- and carbon-intensive company. That is why we have set ourselves the ambitious goal to achieve carbon neutrality, therefore contributing to a better society through the reduction of greenhouse gas emissions.

The second point is around customer demand. There is certainly a customer requirement to be at least carbon neutral by 2050. Particularly in the automotive world, most of our automotive customers have a target, no later than 2040, for the carbon neutrality of their supply chain. That is not only just us as a supplier but also our supply chain has to be carbon neutral as well. This customer requirement for complete supply chain carbon neutrality is a very significant challenge.

The third one is investors. Now that the investment community is very aggressively pursuing a sustainability agenda. We are predicting some significant benefits by being able to demonstrate carbon reduction and neutrality targets before 2050. The midterm (2030) science-based target means that investors are more attracted to NSG as a business customer for their investment, as we are making

commitments for these mid and long-term neutrality targets, and also sustainability targets which match the aspirations of safe green financing in the investment community. Already we have a couple of examples of investors asking whether they can move their investment portfolio for NSG into so-called sustainability investment. This attracts more investment or preferential loan interest rate to us as a company and meets the investors' objectives to shift their investment into sustainable finance. A good example of a sustainability 'win-win' scenario.

The fourth one is employees. Our employees expect NSG to act in a sustainable way and commitment to carbon neutrality is one way to do this. By meeting or even exceeding our employee expectation it encourages greater retention levels of existing employee's as well as enabling NSG to attract new talent into the organization.

Special Feature: Carbon Neutrality Goal by 2050

Q3: What methods are you considering to achieve Scope 1 reduction target?

Mike Greenall (MG): We are studying a number of technology options.

Alternative fuels:

Fossil fuels are currently used in the melting of raw materials such as silica sand during glass production, but the strategy is to replace the fossil fuels used in this process with other fuels that have lower carbon dioxide emissions. Biofuels and hydrogen fuels are the main alternative candidates.

1. Biofuels

I personally think this is the most feasible way to quickly replace fossil fuel and reduce CO₂ emissions. In 2021, we successfully finished a long trial. We fired a furnace on 100% biofuel with the support from the UK government. The fuel emits circa 80% less CO₂ than traditional natural gas used in the sector. The glass made during the test was extremely good quality, and in fact, several customers are very interested in buying this bio-glass.

The major challenge for Biofuels is availability, the fuel comes in many different grades, liquid, and gas. And there is increased cost compared with fossil fuels. We are in discussion with suppliers to better understand the options.

2. Hydrogen energy

We have successfully manufactured architectural glass at our facility in the UK, using hydrogen power in a world-first trial in September 2021 and received many positive

responses from stakeholders.

Again, the main hurdle to introduction is material availability. Many groups including some of the large energy companies are now looking at ways to scale up hydrogen production using water and renewable electricity. There are projects in the UK, the Netherlands and Germany looking to create hydrogen networks. But given the current level of maturity it feels that it will be another decade before there is sufficient hydrogen produced this way to meet the market needs. It is not just the glass industry with an interest in this fuel. For example, steel makers envisage using hydrogen to replace natural gas in their blast furnaces.

Electric melting

Increasing the amount of renewable electricity that we use in glass manufacture process is an option to reduce GHG output. Currently, the Group's float lines use about four megawatts of electricity to help with the manufacture of most of our glass compositions.

The next project will be running around 2024~2025. We will aim to double or even triple the amount of installed electrical heating elements and step by step increase the power until a limit is reached.

Raw materials to produce glasses

Aside from Silica the main constituents of NSG's flat glass are the oxides of Sodium (Na₂O), Calcium (CaO) and Magnesium (MgO).

Historically it has been convenient to use commonly available carbonate minerals: Na₂CO₃, CaCO₃ and CaMg(CO₃)₂ in the glass batch.

These minerals are mixed with silica and then melted at high temperature. In the process of melting, carbon dioxide (CO₂) is emitted as the minerals transform to the oxides. If we substitute carbonate minerals with Oxides in the glass batch, we can avoid this substantial emission of CO₂. And as an additional benefit less energy is needed to melt the glass batch.

Oxide minerals are less readily available currently, but in 2022 NSG successfully produced glass at our float line in Chile using a raw material called Dolime (CaOMgO). Further production campaigns are being planned for 2023.

Carbon Capture

We should not forget to mention carbon capture usage and storage. Carbon capture is well proven, but the exhaust gas stream from glass making is not compatible with the most available capture process. We are working with a partner who has developed a novel process that we believe is compatible with our needs. We are running a trial next year funded by the UK Government. Combined with infrastructure to store or use the captured carbon this technology has a good chance of success.

Special Feature: Carbon Neutrality Goal by 2050

Q4: Any comments to Scope 1 from procurement perspective?

John Wilgar (JW) : I'm glad you asked that. I was going to comment on it myself because I think that in regard to Scope 1 emissions, procurement has a very significant role to play. We see that with alternative fuels such as hydrogen and biofuels or biogas, there is a significant opportunity to decarbonize our furnaces, and the technical work is quite well advanced. For example, in the past 12 months we have fired the furnace in Greengate in the UK using both hydrogen and using biofuels. But actually, then the bigger challenge comes with sourcing these fuels in the quantities and the locations that we need them, and at a competitive price. I think that's where the challenge comes over to the Procurement team to work on securing contracts for those fuels at a much larger scale. Generally speaking this will require long term contracts, to encourage our suppliers to invest in maybe hydrogen production or biofuel and biogas production close to our sites. I think they can also be a way to decouple ourselves from volatile energy markets, such as what we are seeing in Europe today with gas and electricity markets. And perhaps if we are creative we can also look at locating the production of those fuels close to or even inside our sites, which can also reduce the risk of physical supply. So I think there are several factors that we can work on to reduce the risk for the business in terms of pricing and supply by implementing innovative solutions for these fuels. So I'm very keen that our procurement team, really prioritizes work on Scope 1, as well as Scope 2 and Scope 3.

Q5: How about Scope 2?

JW: We are taking our responsibilities very seriously as a company. We have a lot of influence, I believe, as a company to make a huge impact across our stakeholder groups, our suppliers, our customers, our employees, and the communities in which we work. Coming to the question of Scope 2 emissions, this is the highest priority for us in the short term. It's the area where we can make the most impact quickly. We started the program a few years ago to look at renewable energy opportunities and specifically to develop our strategy. Setting clear targets as well to meet a 50% renewable electricity by 2024 is already part of our externally published plans. For this 2024 deadline we have set a clear target and developed concrete actions to reach it.

We've been doing a lot of on-site solar PV projects for example. We have implemented a number of those, notably the one here at Lathom in the UK which has been operating for about three years now. And last week, I was in the US and I had the opportunity to see the newest one in Rossford, Ohio. This is the first installation using the latest generation series six modules from our customer First Solar. It is very important that we also reinforce our relationship with First Solar in these solar PV projects. We have a number of other PV projects across the group, including Versailles (US), Ottawa (US) Aken in Germany and many others that were progressing. We have also implemented so-called guarantee of origin (GO) contracts. In fact, this was the first step in the program really, as a quick action to implement those kind of renewable backed contracts for our electricity supply. And we have most of

our European operations utilizing these guarantee of origin contract for renewable electricity. And we also implemented that in Chile a couple of years ago. And most recently, we've been implementing PPA contracts or power purchase agreements, which are a really different mechanism to have renewable electricity across our business. We have actually implemented the first one in Argentina a few years ago. We are now stepping up our percentage of renewable electricity in Argentina including for the new float line there. Probably the most notable PPA contract was the one we signed in December 2021 in Poland, which covers around two-thirds of our electricity demands for Poland for the next 10 years, which is not only helping us to secure renewable energy but is at a predictable price. The contract is at a fixed price which allows our business to plan and to have certainty on the pricing for their business going forward for the next 10 years. So these are really strong contributors to our overall decarbonization agenda. Scope 2 emissions, broadly speaking, is around 1 million tonnes per year at our baseline and, of course, if we can reduce that by 50%, that's half a million tonnes, which makes a significant contribution to the overall 2030 goals of the business. So Scope 2 is a very important area for us.

Special Feature: Carbon Neutrality Goal by 2050

Q6 : Are you confident to achieve 2024 target?

JW : That's a very good question. I would say the confidence level is not high at this current moment in time. We made good progress where we're progressing towards 30% renewable electricity with all the actions we've taken. We've identified further projects to help close the gap. But at this current moment in time, there's not an absolutely clear path to achieving the 50%. There are a couple of key areas within our business that we need to step up the action. In terms of regions, one is Asia, and the other is North America. As I mentioned previously, we've made very good progress in Europe, and actually, South America has caught up very, very well. We have seen good actions in Chile and Argentina and also we are starting to take some good actions in Brazil. So I'm confident those regions are on the right path. But we do have some headwinds, I would say to make progress in Asia, and in North America. Some of this is around the market, around the maturity of the market for things like PPAs in those regions, particularly Asia. North America, it is quite a mature market for PPAs. But actually, we have some accounting challenges to implement something like a virtual PPA in North America. We have to work closely with our treasury and finance teams to help overcome that. So I would say there was still a significant challenge across the group to achieve that 50% target. But I'm confident working with our business partners we can work to overcome those barriers.

Q7: There are some differences between regions in the point of introducing and progress in PPAs. Do you think this is rooted because of the regions? Are there any measures to increase PPA or any other way to adopt renewable energy?

JW : There are a number of factors. I think the quickest tool that we could employ would be renewable energy Certificates or GOs. Similar to what we've done across Europe. The downside is that these are very expensive in Japan and in North America. But it's certainly an option for us if we want to achieve the goal. We can put in place those contracts quite quickly. However, they're becoming increasingly expensive even in Europe as the demand for these certificates is increasing. Therefore, the cost is rising. So it will be a significant cost for the group to implement

that as a primary tool to achieve renewable electricity. There are a number of other longer-term opportunities. For example, we are considering the possibility to generate electricity from the waste heat from our furnaces. This could be an option, for example, where the furnace is due for cold repair in the next couple of years. But these do take time to implement and not insignificant investment. In some areas we are working with supplier partners to make these investments backed by a long term contract with NSG to provide a stable environment for the supplier to spend their capital.

Q8: Let's move on to Scope 3. What is your impression to it and how are you planning to address this?

JW : I would say this is the least mature of our actions on decarbonization. We did take proposals to the Group's Sustainability Committee in March 2022 to establish a sustainable supply chain program. This was approved and we have formed a cross-functional team to look at sustainable supply chains which is looking at the Scope 3 emissions within the supply chain, which are over 3 million tonnes per year. So it's quite a significant part of our overall emissions as a company. However, Sustainable Supply Chain is not only about Scope 3 emissions but it's also about all the other factors within our supply chain around social aspects, employment law, human rights in

the supply chain, good compliance and governance, actions to prevent bribery and corruption to provide a few other examples. It is about using our influence as a responsible company to try to change the behaviors of our suppliers, but also in some cases of our customers to impact their own goals on decarbonization and sustainability. So that program is well underway. And we have returned to the sustainability committee in September 2022 with more concrete proposals around all of those factors within our supply chain, but also in particular on how we can reduce our Scope 3 emissions and contribute further to the decarbonization goals of NSG.

Special Feature: Carbon Neutrality Goal by 2050

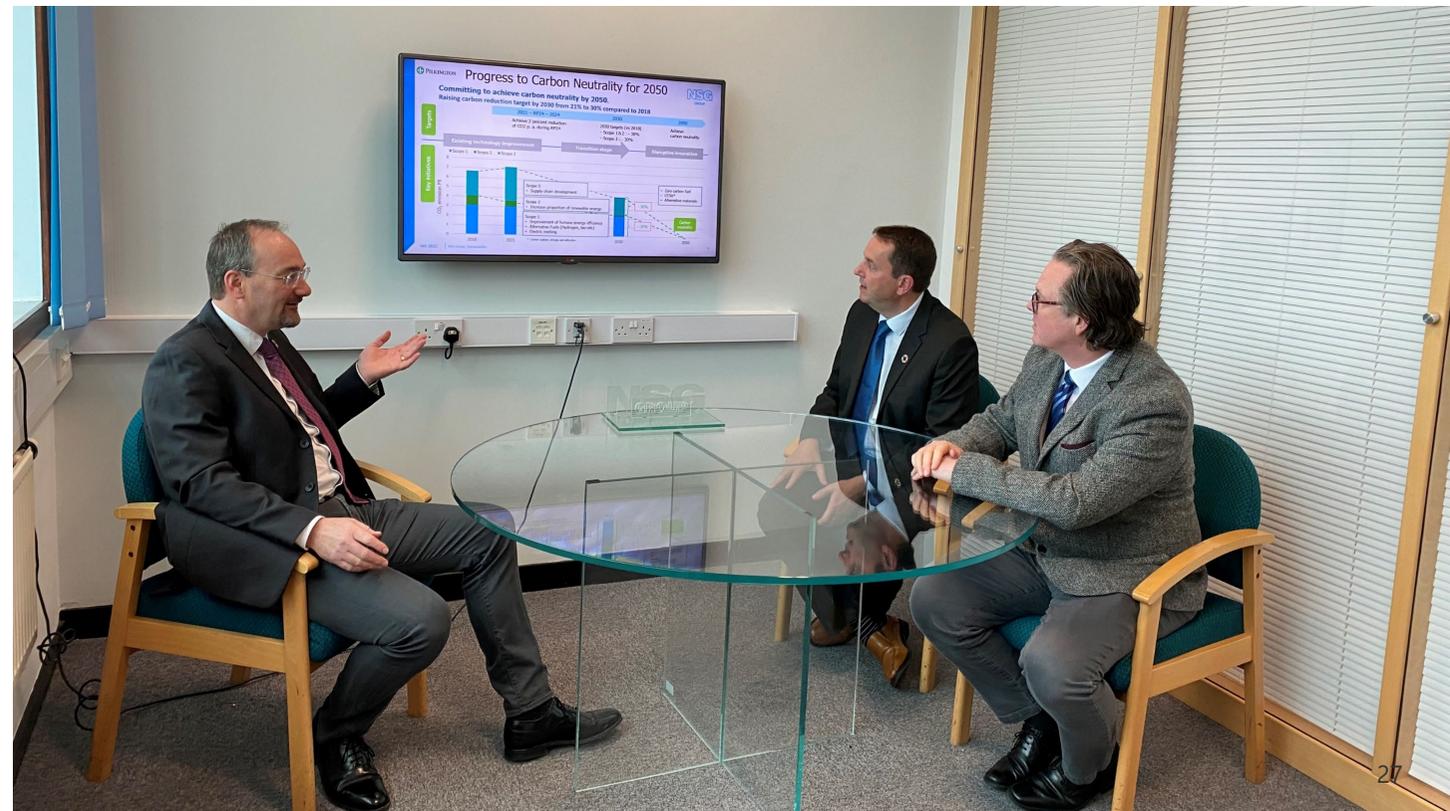
Q9: What can supplier development actions be?

JW : I think the first thing I would say is we need to get data, more data to really have an accurate understanding of our priorities. And the way we're calculating Scope 3 is based on published emission factors, which are basically the average emission factor for each category. So our next phase will involve working with our suppliers to understand that their actual emissions. My belief is that if we work with the right suppliers, their emissions will be lower than average. We know that some companies are working on areas like carbon capture within their own processes, or a renewable electricity and so on. So we can help to share best practices across the supply base from those suppliers that are really at the cutting edge. I think through the supplier engagement activities that we plan in the coming months and years, we can establish that program of best practice sharing, but most importantly, gathering the data and verifying the data. It's really important to have that verification exercise completed so that we understand the actual emissions in our supply chain. But on the other side we have around 1/3rd of our emissions within Scope 3 which are related to customers and joint ventures. So while those are not suppliers to NSG, they are companies that we can influence. So we know that companies like First Solar are a big part of that, considering the energy they use to process our glass. As are our joint ventures in South America. We have some influence over those companies to try and change their behaviors as well.

Q10: How does NSG group have an advantage over our competitors in procurement area?

JW : That's a good question. I think some of the indicators published recently show that we are making strong progress. We have been recognized by CDP as a supplier engagement leader, putting us in the top 10% of companies assessed by CDP. Within the EcoVadis assessment our Sustainable Procurement score of 70 is in the top 3% of glass companies assessed by EcoVadis. I think these are signs that we're making good progress. And I do believe that our Sustainable Supply Chain program will enable us to move further in a positive

direction. My personal view, based on all these indications is that we are becoming a leader in sustainable supply chains. And I think we need to sustain our momentum in this direction and this means engaging our procurement team but also engaging across the business and our supply base to go on the journey with us. We need to build on the good work that we've done, the foundation that has been established; but we need to go even further and faster.



Special Feature: Carbon Neutrality Goal by 2050

Q11: Some say it is difficult to achieve Scope 3 targets. What challenges do you think should be solved to achieve the goal?

DC : I think the biggest challenge on Scope 3 is how to manage the supply chain effectively, particularly in countries where climate change is not recognized as aggressively as in other countries. Though I would say that there is no company anywhere in the world that truly understand their indirect emissions, i.e. their Scope 3 impact. Scope 3 is just a way of accounting for somebody else's emissions that are Scope 1 and Scope 2. If everybody is achieving Scope 1 & 2 neutrality, then Scope 3 would effectively become neutral. It is not as simple as that, because not every other nation in the world has the same level of targets. So the challenge has become how do we manage the supply chain.

JW : First and foremost we need to have an accurate and complete measurement of our baseline Scope 3 emissions. This is more difficult than it sounds as there are different methods to measure Scope 3 emissions. This has to include the right systems to measure our progress on reducing the emissions. Then we need to engage with suppliers to understand their actual emissions and work with them to drive these down over time. I think this will also drive innovation in the supply base to introduce new technologies such as carbon capture or alternative fuels such as hydrogen and biogas. What is certain, is that we cannot achieve these targets alone – we need our own company and our suppliers to be fully focused on this – suppliers that perform better will be rewarded with more business opportunities with NSG. Those suppliers who do

not support the program are likely to see their business with NSG shrink over time.

Q12: What actions do you think are necessary to achieve 2050 CN?

MG : Fundamental is a much higher availability of low cost renewable electricity, green hydrogen production and distribution and viable CCUS schemes.

Government and industry must work together on this. NSG cannot create the necessary infrastructure alone. We should be talking with the governments around the world in each of the regions, strongly lobbying together with other members of the glass industry and other heavy industry grouping that share the same challenge.

In the meantime, we will continue to trial and publicize new technologies that can lower carbon emissions.

Q13: Contribution of our products for carbon dioxide reduction?

MG: The largest single opportunity to reduce building energy needs relates to the building envelope. Whether it is to retain heat in cold climates or exclude heat in hot countries. And to do that whilst letting enough light in to minimize the need for electrical lighting.

The NSG Group has a wide range of glass products that are designed to meet the needs of the global market, and we constantly strive to develop new things.

We are developing a new thin triple glazing that has low embedded carbon and is easier to implement in window frames.

We see an enormous opportunity to retrofit existing buildings with superior glazing materials. Pilkington Spacia™ is a vacuum insulating glazing. It is very thin and can be used to retrofit existing windows even when buildings may be subject to protection orders that prevent other improvements. We have upgraded this product this year to make it even better performing.

Other areas where NSG products contribute to decarbonization:

• Solar photovoltaic business

We apply custom coatings to the glass that we supply to the thin film solar industry. The market for thin film photovoltaic panels is growing rapidly as more investors seek ways to increase availability of renewable energy.

• Fibers including MAGNAVI™

We have high hopes that this new high modulus fiber product will contribute to weight reduction of composite materials used for various purposes including transportation equipment, and in the future, be attractive to manufacturers of wind turbine blades. They are looking to increase the mechanical properties of the composite materials used to fabricate the blades.

Special Feature: Carbon Neutrality Goal by 2050

Q14 : How confident are you to achieve the targets of 2030 and 2050?

MG: I am very confident that we will achieve the 2030 target. We have a clear roadmap of the proven technology steps that we need to take. If we implement the actions outlined in the roadmap, we will be able to achieve our targets for 2030.

I think the basic technology to achieve 2050 is known, so there is no technology barrier. But what we do need is an industry wide effort, supported by government policy to increase the availability of affordable renewable electricity, biofuel, hydrogen, and carbon storage.



DC: I would say 100% confident we will achieve carbon neutrality in 2050. Probably the more significant challenge will be the commercial challenge. I think this decarbonization challenge or net zero challenge is not just a challenge for NSG, it is a wider societal challenge. When we define new challenges in society or within the NSG group, people tend to rise to the challenges and find solutions. We've seen that in many cases within society, if you look at the most recent sort of global challenge, COVID-19, their reaction and solutions are a great example. I expect we will react as a society in the same way to climate change.

In many cases we know what we need to do, although we don't have all of the solutions yet. We have good ideas of how to solve the problem. The challenge really will be around commercialization. It will be a logistical challenge and it will be a cost challenge. That is where the NSG Group will not resolve those issues on its own. The solutions to problems such as the production, marketing and distribution of hydrogen will not come from us, the glass manufacturers, but from other companies and other areas of society. We just need to be ready to tap into those technologies as and when they become available.

JW: As I previously mentioned, Scope 3 emissions are becoming an increasingly significant proportion of our overall emissions. We can only achieve the targets that have been set by having robust and rigorous measurement systems and by working with the right suppliers who share our commitment to addressing climate change. Also, we need a Procurement team which is fully committed to achieve the required level of emissions reductions. I am confident that if we get these three important aspects right we can achieve or even exceed the targets.

For 2050 target, to achieve carbon neutrality by 2050 is a must for NSG but mainly for the planet and society. As a responsible company we cannot commit to anything less than this. It may be in the future that we have to review the timescales for carbon neutrality and even bring them forward. I also believe that "necessity is the mother of invention" – which means that when faced with a significant challenge we can be at our most creative and inventive to overcome the challenge. This was the case when the float process was invented in the 1950s and I think it can be the same for this challenge to address climate change. We owe this to our children and grandchildren.

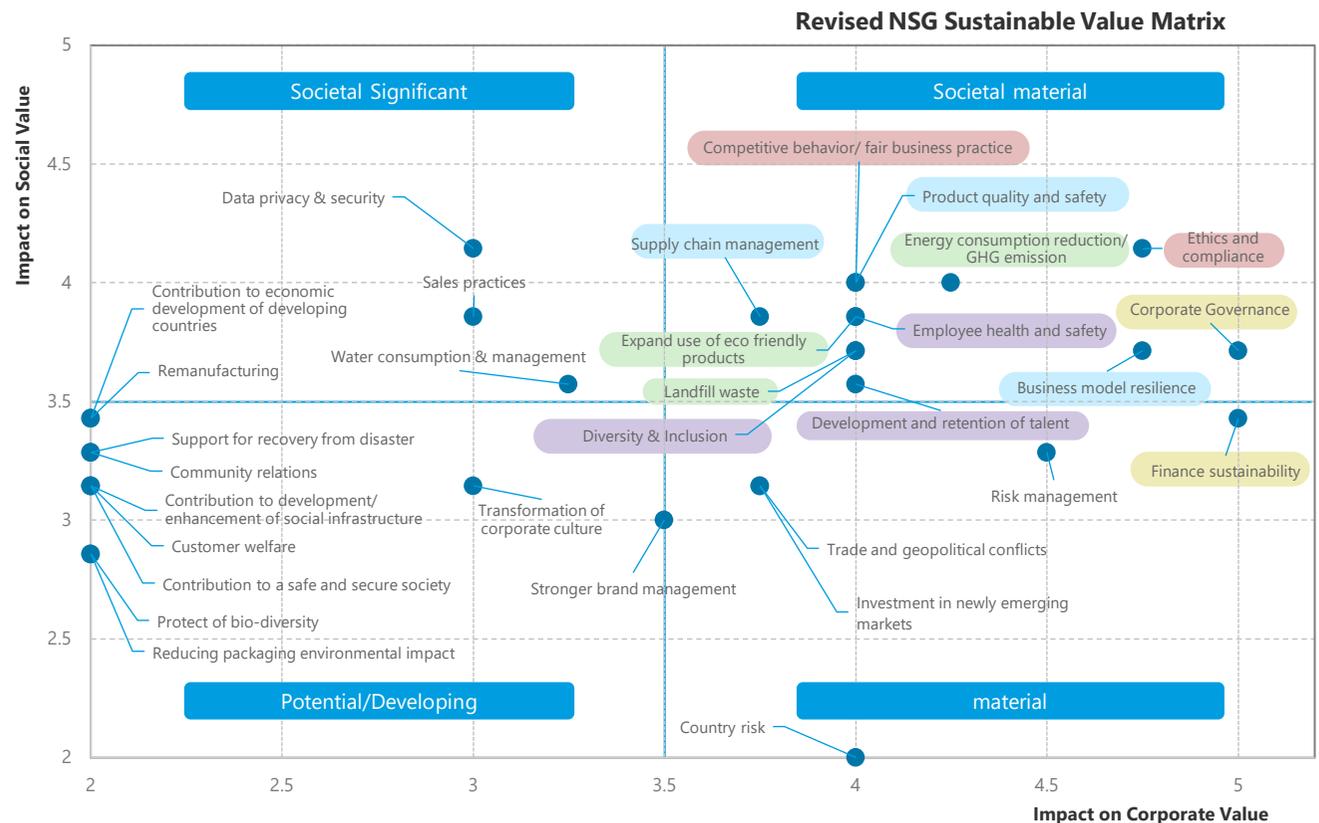
Materiality



Executive Officer, Head of Group Sustainability
Shiro Kobayashi

The following five items have been identified as **Material** to attain sustainable growth of the Group and contribute to a sustainable society in the medium-to-long-term. The Group selected these five items according to their significance as assessed on the matrix measuring the axes of impacts on both society and the Group. Each item is categorized by referring to the classification in the criteria such as GRI, SASB or IIRC, the impact on each stakeholder is scored, and the item with the highest score on the two axes is reclassified as the "priority area" and selected. Of these, "Corporate governance" and "Securing financial base" have extremely strong impact on the Group and are also the foundation of it, so they are set as the issues that the Group will focus on separated from the selection of materiality.

Environment	Contribute to the realization of a decarbonized society with GHG emissions reduction by eco-friendly manufacturing process and sales expansion of eco-friendly products
Society Shift and Innovation	Identify significant challenges to society and providing technology/product/service to their solution in a timely fashion
Safe and High-Quality Products and Services	Enhance both the products and service quality through improvement of quality and supply chain control
Ethics and Compliance	Carry off significant trust from stakeholders by constant address on Ethics and Compliance
Human Capital	Ensure sustainable growth of the Group and contribute employees' welfare through a variety of initiatives to enhance developing Change Leaders at global level, safety, health, and Inclusion and Diversity



Materiality

The Group will set targets for each item and take specific actions accordingly.

	Aspiration	Background and Focal Points
Environment	Contribute to the realization of a decarbonized society with GHG emissions reduction by eco-friendly manufacturing process and sales expansion of eco-friendly products	<p>The glass manufacturing is a fossil fuel-consuming industry. Therefore, it is the most critical challenge for us to address such initiatives as reduction of GHG emission, saving energy and waste management in order to improve environment so that we can attain sustainability for society and the Group. At the same time, we also believe it is mandatory for us to contribute to preserving the environment through provision of products and services. Aiming Carbon Neutral with eco-friendly manufacturing process and products & zero waste to landfill.</p> <ul style="list-style-type: none"> – Energy consumption & GHG emissions reduction (realize eco-friendly manufacturing process) – Sales expansion of eco-friendly products – Reduction of waste to landfill
Society Shift and Innovation	Identify significant challenges to society and providing technology/product/service to their solution in a timely fashion	<p>Always keep an eye on the rapidly changing movements of society, accurately grasp the flow, and then aim to be the company contributing to the stakeholders with identifying significant challenges to society and providing technology/product/service to their solution in a timely fashion, which are the source of innovation.</p> <ul style="list-style-type: none"> – Innovate new products/service and revenue increase – Strengthen business development and R&D function
Safe and High-Quality Products and Services	Enhance both the products and service quality through improvement of quality and supply chain control	<p>As a manufacturer, it is the minimum mission for our stakeholders to continue to provide safe and high-quality products in a stable manner. In addition, the value of not only products but also services will be much required. The Group aims to increase value for the stakeholders and ensure sustainable growth by consistently supplying customers with safe and high-quality products and services.</p> <ul style="list-style-type: none"> – Enhance quality assurance – Enhance supplier management – Enhance service culture
Ethics and Compliance	Carry off significant trust from stakeholders by constant address on Ethics and Compliance	<p>As a member of society, it is an essential mission to respect and comply with the rules of society. The Group is aiming to be the company which carry off significant trust from stakeholders through constantly addressing on E&C activities to avoid corporate value deterioration.</p> <ul style="list-style-type: none"> – Identify/address and info. sharing for E&C risks – Fair business practice – anti-bribery/corruption, Conflicts of interest and competition compliance – E&C governance and oversight
Human Capital	Ensure sustainable growth of the Group and contribute employees' welfare through a variety of initiatives to enhance developing Change Leaders at global level, safety, health, and Inclusion and Diversity.	<p>Under one of the core value, "Respect others and unleash their potential", the Group addresses a variety of initiatives to enhance safety, health, I&D while engaging in development/creation of talents who would ensure sustainable growth of the Group. At the same time, we aim to be the company contributing employees' welfare. Ultimate goal for the safety is to keep zero injury.</p> <ul style="list-style-type: none"> – Inclusion and Diversity – Health and Safety – Human development

Materiality

FY24 targets and FY22 progress

	FY24 target	FY22 progress	SDG s
Environment	<ul style="list-style-type: none"> 8 percent reduction in CO₂ intensity across glass manufacturing operations compared to FY18 	KPI of 0.74 kg CO ₂ (e) / tonne glass (e) was measured during FY22. This represents a 7% YoY improvement in the KPI since FY21 (0.79) and a 2% improvement vs baseline of FY18 (0.75) . This improvement was achieved via a combination of the continued efficiency improvements associated with the implementation of the NSG Group energy & carbon management program and improvement in utilization of production assets with recovery in demand post Covid-19 pandemic.	 
	<ul style="list-style-type: none"> 20 percent reduction of waste to landfill compared to FY20 	Waste to landfill increased by 1.2 kt to 19,6 kt in FY22 versus FY21 but reduced by 11% versus the baseline FY20. This is due to an increase in waste from the glass melting process (rejected raw materials). Efforts will continue to be made to reduce this.	
Human Capital	<ul style="list-style-type: none"> Reduction of Significant Injury Rate (20 percent vs. FY20) 	Significant Injury Rate was 0.31, a 24% increase compared to FY21. We believe that the Corona pandemic has had an impact on the reduction of safety activities. More Effective safety activities under corona restrictions are being addressed.	
	<ul style="list-style-type: none"> Employee Engagement, "Our Vision" penetration ratio (80 percent) 	In an employee attitude survey conducted in January 2022, 84% responded positively to the question on whether their immediate supervisor's decisions are in line with the core values of Our Vision, confirming that the penetration of Our Vision among employees is improving.	
	<ul style="list-style-type: none"> Female managers in NSG Group <ul style="list-style-type: none"> 12.7% as of 2021 June 30st FY24 target : female manager increase at least 1% in each SBU and Function compared to 2021 June 30st 	Female managers in NSG Group was 14.3% as of 2022 June 30th , by 1.6% improvement. The progress will be monitored half yearly and best practice will be shared.	
Responsible sourcing	<ul style="list-style-type: none"> To achieve and maintain a 95 percent acceptance of the NSG Supplier Code of Conduct by our key suppliers. 	93% of Key suppliers have now agreed to the Supplier Code of Conduct or can demonstrate their own equivalent code. This is an improvement of 3 points compared to FY2021. We will continue our efforts to improve the acceptance rate of the Supplier Code of Conduct with regard to key themes such as human rights and the environment.	  
	<ul style="list-style-type: none"> To assess and monitor the sustainability performance of 65 percent of our suppliers by external spend. 	EcoVadis sustainability assessments completed for 52% of external supplier spend. This result is similar to that of FY2021. We will continue our efforts to improve assessment coverage.	  
	<ul style="list-style-type: none"> To achieve and maintain an average 50 sustainability score for all assessed suppliers. 	Average scoring of all suppliers Ecovadis assessments increased by 4 pts to 59. In particular, the number of suppliers with low scores has decreased, leading to an improvement in scores.	  
Ethics & Compliance	<ul style="list-style-type: none"> Hot line utilization (Actual vs. benchmark data) 	NSG Group received 124 reports for FY2022 with decrease by 13 from FY2021. The benchmark for similar-sized enterprises in number of employees is 258 according to an external consulting firm. Group E&C continues to analyze variance between the number of the actually received reports vs. the benchmark data.	
	<ul style="list-style-type: none"> Increase of concern reports from Managers Report Form targeting 30 percent of the total report 	The ratio of reports from Managers Report Form (MRF) was 28 percent of the total reports in FY2022 with increase by 17 points from FY2021. Group E&C continues to promote MRF via various communication channels such as internal bulletins and newsletters.	
	<ul style="list-style-type: none"> Education completion ratio (95 percent completion by managers) 	98.6 percent of Key Roles completed relevant trainings during the annual education campaign in FY2022. 85 percent of managers completed with increase by 9 points from FY 2021.	
	<ul style="list-style-type: none"> Top level communications (Minimum four annually (CEO/C-Suite)) 	Top level communications regarding ethics and compliance were made four times during the fiscal year such as an internal bulletin by the name of CEO, CEO message video during the 2021 Ethics and Compliance Week.	

Environment Climate Change, TCFD

Initiatives for TCFD

Since 2017, the NSG Group has been developing its climate-related disclosures in line with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD), utilizing the CDP framework; in 2021, it expressed its support for the TCFD recommendations, and in addition, it conducted a detailed climate-related risk and opportunity-focused scenario analysis and undertook activities to complement the existing climate change roadmap. Below, we present the NSG Group's climate change initiatives in line with the four disclosure recommendations of the TCFD recommendations: governance, risk management, strategy and indicators and targets.

Governance

TCFD Recommendation

- Board oversight of climate-related risks and opportunities

NSG Group Approach

- The Group CEO and Board of Directors (BoD) establish the basic policies and goals of all Group activities including climate change. Climate related issues are discussed at Management Committee (MC), Strategic Risk Committee (SRC) and Sustainability Committee (SC) level with the aim of ensuring targets & action plans fulfil all sustainability goals and connect to all relevant business aspects. This includes, for example, strategies and actions based on risk and opportunity analysis to achieve both corporate growth and positive social contribution.
- A director on the BoD that is expert in the ESG field continued to provide input and guidance during FY22 across several key aspects of relevance
- The frequency of formal reporting of climate related issues was increased to a minimum of quarterly reviews.
- The Governance structure of NSG Group for Climate Change

NSG Group Organization for Climate Change Management



TCFD Recommendation

- Describe management's role in assessing and managing climate related risks and opportunities

NSG Group Approach

- At the Sustainability Committee the concrete actions for the sustainability policies, goals and targets are managed. The principle roles of the SC include; to act as an advisory body for the CEO to review the strategy, coordinate all sustainability activities within the Group, monitors and steers the Group's response to Environmental and Climate Change risks and opportunities which is discussed at SRC, ensure effective communication of these matters with our stakeholders. The membership of the SC consists of global leaders of all Group functions and SBU heads. In FY2021, the following activities were mainly carried out for material items.
 - ✓ Increasing level of decarbonization targets to be in line with levels well below 2°C and SBTi certification.
 - ✓ Updating Internal carbon price with reference to recent external carbon prices.
 - ✓ Full alignment of the ESG strategy with the Revival Plan 24 (RP24).
 - ✓ Consider defining Eco friendly products and establishing relevant KPIs to track this aspect in the future.

Environment Climate Change, TCFD

Strategy

TCFD Recommendation

- Describe the climate related risks and opportunities the organization has identified over the short, mid and long term

NSG Group Approach

The scenario analysis activities identified physical and transition risks for the NSG Group in the timescale to 2100 according to three main scenarios.

- **Low Carbon World (<2°C)**
 - associated with aggressive mitigation to limit carbon emissions over the next 30 years in order to move to a low carbon economy.
- **RCP 4.5 Intermediate (2-3°C)**
 - an intermediate scenario which assumes current policies, pledges and targets are met.
- **RCP 8.5 Hot House World (>4°C)**
 - the world continues to increase emissions doing very little if anything to avert physical risks. The world's temperature continues to increase significantly with catastrophic consequences

Risks and opportunities identified include the impact of;

Current regulation opportunities to supply high-performance products in relation to the European Energy Directive

New regulations Risks of increased production costs through new emissions trading schemes (ETS), new European Building Emissions Trading Scheme (ETS) leading to opportunities for sharing high-performance energy-saving products.

Technical Development EV market and the growth of the energy-efficient buildings market.

Legal compliance Risks and costs of meeting future compliance, opportunities for more stringent product demand, NSG's competitive product development, etc.

Market aspects e.g. customer specifications for building / vehicle efficiency with associated opportunities for product development

Reputation customer specifications for building / vehicle efficiency with associated opportunities for product development

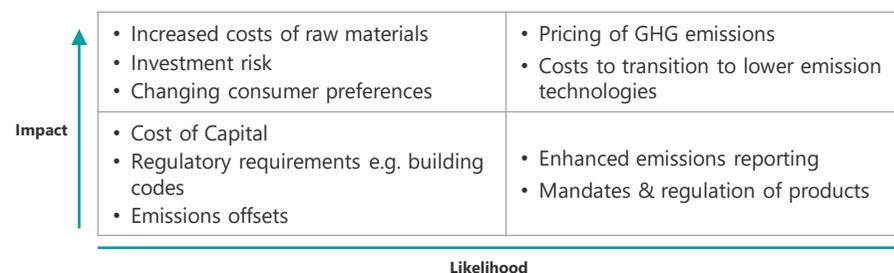
Acute Physical risk e.g. flood, typhoon risk impact to operations & value chain (supply continuity) opportunity for specific product development e.g. storm glazing.

Chronic Physical risk e.g. sea level rise primarily risk impact to current and future operations and value chain.

The identified risks and opportunities were quantified, categorized and prioritized accordingly in accordance with the NSG Group's standard risk management framework. It includes impacts in policy and legal aspects, technical aspects, market aspects and reputational aspects.

Scope of assessment of annual impacts and transition risk potential

Residual risk in the long-term perspective (2035) under the Low Carbon World scenario:



Examples of identified risks with high impact and urgency

Impact of Climate Change on NSG Group		Financial Impact	Urgency
Transition Risk (Low Carbon World Scenario)	Pricing of GHG emissions	Very high >40 oku/yr	Very likely to occur, high urgency for mitigation
	Costs to transition to lower emissions technology	Very high >40 oku/yr	
	Increased cost of raw materials	Very high >40 oku/yr	Likely to occur, medium urgency for mitigation
	Investment risk – unlisted from TSE prime market	Very high >40 oku/yr	
Physical Risk (RCP 8.5, 4°C Scenario)	Drought Stress	Medium 10 – 20 oku/yr	Likely to occur, medium urgency for mitigation
	Chronic Heat	Low 1.2 – 10 oku/yr	

Environment Climate Change, TCFD

Strategy

TCFD Recommendation

- Describe the impact of climate related risks and opportunities on the organizations business strategy and financial planning

NSG Group Approach

- NSG Group business strategy already incorporated the risks and opportunities identified from the 2019/20 materiality assessment and the scenario analysis. This has been further enhanced within the RP24 and the inclusion of various aspects of the climate scenario analysis activity completed in 2021/22.
- Examples of key initiatives regarding mitigation of climate impacts and maximizing opportunity include;
 - ✓ Working with supply chain and value chain partners to establish win-win scenarios for product development supporting the low carbon transition. This includes the launch of a specific project in 2021/22 titled 'Sustainable Supply Chain' which will focus on various sustainability aspects including CO₂* emissions in the supply chain.
 - ✓ Investment in R&D technology developments to reduce operational GHG emissions
 - ✓ Development of new products to support society decarbonization and achievement of national decarbonization targets, e.g. net zero 2050 ambition.
- Such activities match precisely to the NSG Group mission of 'Changing our surroundings, improving our world'.

* Because >99.9% of our GHG emissions are CO₂, thereafter we only mention CO₂.

TCFD Recommendation

- Describe the resilience of the organization strategy, taking into consideration different climate related scenarios including a 2°C or lower scenario

NSG Group Approach

- As previously described, NSG undertook a quantitative and qualitative analysis of climate resilience based on several warming scenarios in 2021/22. A key output from this study was understanding the resilience associated with the existing mitigation measures that were already embedded into the Group strategy and developing a prioritized list of actions to undertake moving forwards.
- One key output from this analysis has been the development and implementation of mid and long term decarbonization targets for the Group given that the highest impact and likelihood aspects was the increased costs associated with pricing of GHG emissions. The NSG Group established a verified SBT in 2019 which has been replaced in 2022 with a target based on an increased level of ambition, utilizing a well below 2°C warming scenario.
- Adherence to this target will improve the resilience of the Group to climate related risks from both physical and transitional impacts.

Environment Climate Change, TCFD

Risk Management

TCFD Recommendation

- Describe the organizations processes for identifying and assessing climate related risks

NSG Group Approach

- The Group maintains a formal Enterprise Risk Management (ERM) process, managed by the Strategic Risk Committee (SRC) and based on ISO31000. The SRC defines the risk appetite and tolerance thresholds associated with the Group activities and undertakes a regular process to identify and assess the risks to the achievement of its strategy. Climate related risks are included within the risks identified and monitored by the SRC, and these are assessed using quantitative criteria across four vectors: financial impact; operational impact; compliance impact and reputation impact.

TCFD Recommendation

- Describe the organizations processes for managing climate related risks

NSG Group Approach

- Climate related risks are assessed and monitored by the SRC following the same criteria as other strategic risks. The SRC evaluates the controls and mitigations which address the risk and directs additional treatment measures to be implemented as necessary. A risk owner is defined who takes responsibility for monitoring and reporting the progress against the defined action plans to manage the risk within the Group's appetite. Individual controls and countermeasures are managed within the SBU's and Group Functions and operational reports are also made to the MC and SC.

TCFD Recommendation

- Describe how processes for identifying, assessing and managing climate related risks are integrated into the organizations overall risk management

NSG Group Approach

- Climate related risks are assessed and monitored by the SRC following the same process and criteria as other strategic risks. The identified risks and opportunities presented to the SRC are also presented to the MC on a regular (minimum six monthly) basis to ensure full integration of the overall risk management and business strategy.

Environment Climate Change, TCFD

Metrics and Targets

TCFD Recommendation

- Describe the metrics used by the organization to assess climate related risks and opportunities in line with its strategy and risk management process

NSG Group Approach

- NSG Group monitors all GHG emissions across the supply chain (scope 3), own operations (scope 1 & 2) and customer impacts (scope 3). The primary metric tracked is absolute tonnes of CO₂ emissions across these three emission scopes. Supplier sustainability impacts are also tracked using software tools such as the EcoVadis platform. Future predictions of the GHG emissions are used to estimate the impact of the various actions for GHG emission mitigation, with a hierarchal approach of these actions to ensure investment and implementation is optimized according to the strategic risk and opportunity for each action and overall impact to the Group goals and targets.
- These actions are incorporated into the NSG decarbonization roadmap at company and local (e.g. manufacturing site) level, and are regularly reviewed using the process described above

TCFD Recommendation

- Disclose scope 1, scope 2 and if appropriate scope 3 greenhouse gas (GHG) emissions and the related risks

NSG Group Approach

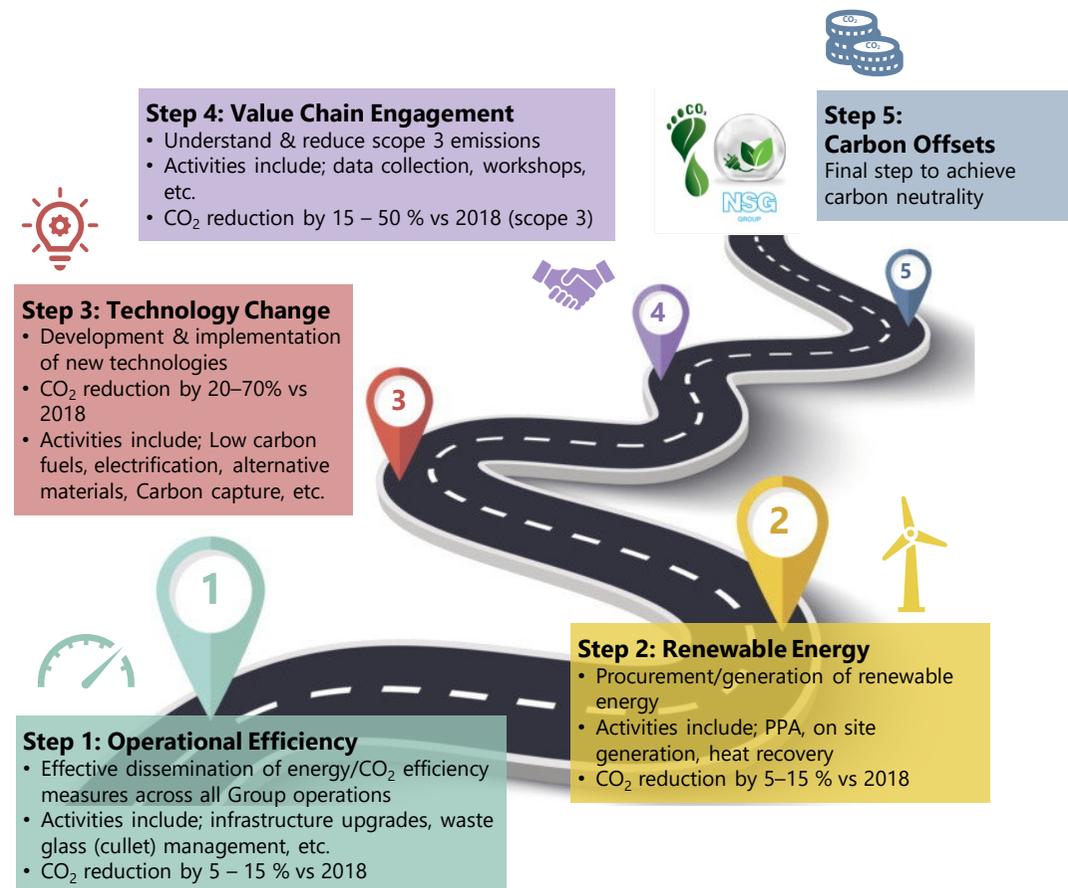
- CO₂ emissions in the baseline year for the NSG Group SBT were as

Scope 1	Scope 2 (market)	Scope 3
3,103 ktonnes	891 ktonnes	2,591 ktonnes

- In the latest report year (CY2021) the emissions across the three scopes were as follows;

Scope 1	Scope 2 (market)	Scope 3
3,028 ktonnes	622 ktonnes	3,556 ktonnes

- A program of operational decarbonization actions has supported and will continue to support achievement of GHG emission reductions. These actions play a key role in the climate change risk mitigation strategy of NSG Group.
- These actions are formally managed as the NSG Group decarbonization roadmap within the climate change governance structure. The decarbonization roadmap is an overview of detailed action plans at operation site level defined to support the delivery of the mid term NSG Group SBT. The high level roadmap is summarized in the figure below;



Environment Climate Change, TCFD

Metrics and Targets

TCFD Recommendation

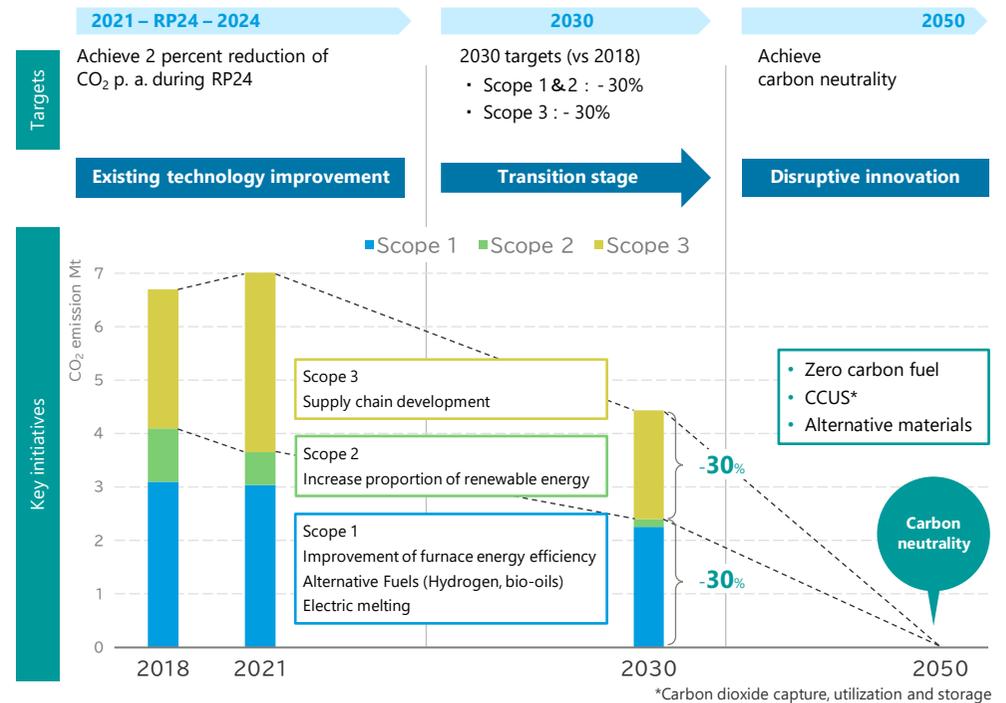
- Describe the targets used by the organization to manage climate related risks and opportunities and performance against targets

NSG Group Approach

- The NSG Group established a SBT verified in 2019. This target was a 21% reduction in absolute CO₂ emissions across Scope 1 and Scope 2.
- SBTi is a partnership between CDP (former Carbon Disclosure Project), UN Global Compact, WRI (World Resources Institute) and WWF (World Wildlife Fund), which helps companies set the science-based goals for reducing GHG emissions to prevent the impact of climate change.
- In 2021, the NSG Group evaluated this target and took the decision to increase the level of ambition for this target in terms of the level of reduction and emission scopes included, as well as the introduction of a formal commitment to achieve carbon neutrality
- This revised target was verified by the SBTi in May 2022. The target is a 30% reduction in absolute CO₂ emissions across Scope 1 + Scope 2 and Scope 3 to be achieved by 2030 (vs a 2018 baseline).
- 2021 performance against this revised target has been challenging due to several aspects associated with the absolute reduction nature of this target;
 - Economic recovery post Covid19 pandemic has resulted in increased production output of products
 - NSG Group continues to invest in new operational assets, with the establishment of a new production facility in the USA (Luckey) and in Argentina (Cardales)
 - Customer demand for high performance glazing products to support the low carbon transition, e.g. high thermal performance glazing results in a higher embodied carbon content of the product in it's manufacture.
 - Increased analysis and understanding of emission impacts, especially Scope 3 emissions has resulted in an increase in the level of emissions reported.

- These 'negative' aspects have been offset by the ongoing program of activities to reduce operational emissions across the NSG Group. These activities include;
 - Continued implementation of operational efficiency improvement measures
 - Increased proportion of electricity from certified renewable generation sources
 - Implementation of R&D trials in specific aspects of decarbonization technologies, e.g. the use of alternative fuel technologies.
- Moving forwards, the implementation of the NSG decarbonization roadmap will overcome the 'negative' market aspects leading to a reduction in absolute CO₂(e) emissions whilst maximizing the opportunities associated with continued development of carbon saving products and expansion of NSG operations.

Roadmap to Carbon Neutrality for 2050



Environment Energy

Energy use

The NSG Group is continuously working to minimize energy use in all processes in order to contribute to sustainability throughout the glass lifecycle.

Initiatives to reduce energy use and CO₂ emissions

Energy and carbon management

All initiatives are reviewed for progress by the heads of each business unit and head office at the semi-annual Energy and Carbon Management Committee meetings.

Team responsible for energy and carbon management

The energy pilot plant program was reviewed in 2022 by a management committee involving key departments such as manufacturing, engineering, purchasing and R&D, based on the draft plans proposed by each plant, with a focus on issues specific to each business line. This 'bottom-up' approach enables the local production site level to take ownership and drive the decarbonization roadmap activities. This roadmap focuses on the implementation of five key activities for achieving medium-term (2030) SBT targets and long-term (2050) carbon neutrality. The five activities will be implemented in parallel and integrate existing activities as well as the development and implementation of future technologies and processes. The respective activities are as follows.

1. **Operational efficiency** – ongoing development and implementation of energy and carbon efficiency programs
2. **Renewable energy** – focus on the use of renewable energy through various mechanisms
3. **Technology transformation** – R&D-led programs to lead technology development programs that evolve into SBU-led implementation programs for these technologies
4. **Value chain engagement** – focus on reducing Scope 3 emissions using different approaches
5. **Carbon offsets** – the final stage of the NSG's decarbonization journey. Carbon offsets are used as appropriate to achieve carbon neutrality.

Progress on this activity is coordinated by a multifunctional team at the heart of Energy &

Carbon Management and reviewed every six months.

Operational energy & carbon efficiency projects

The Operational Cost Saving (OCS) program aims to reduce all operating expenses, including direct and indirect costs. One of the Group's main direct costs is energy costs. In FY2022, several projects were identified to reduce energy consumption, CO₂ emissions and costs. Led by the Manufacturing Excellence Department, more than 200 energy and carbon efficiency projects, including furnace fuel combustion optimization, were undertaken at NSG Group sites, resulting in annual energy efficiency improvements of over 50 GWh and CO₂ savings of over 30 kt. In addition, digitalization projects such as Industry 4.0 and Internet of Things (IoT) initiatives for energy management are underway throughout the organization. In addition, furnace retrofitting is planned to continue from 2020, which is expected to significantly improve energy and carbon efficiency over the lifetime of the furnaces, which will last at least 15 years.

Environment Energy

Research and development activities

Reducing furnace CO₂ emissions and stabilizing energy supplies remain the basis for business continuity. As one of the projects to achieve this, in August 2021, the NSG Group conducted the world's first successful experiment in the production of architectural glass using hydrogen as a low-carbon alternative fuel in the float glass manufacturing process at the Greengate plant in St Helens, UK.

This initiative was part of a project managed by HyNet, an industry consortium in the North West of England, and funded by the UK Government. If all natural gas could be replaced by hydrogen, Scope 1 CO₂ emissions could be reduced by about 80%. Float glass produced in this test has a 40% lower carbon footprint than standard float glass. The NSG Group was also the first in the world to successfully manufacture float glass using bio-based fuel oil.

We continue to search for low-carbon alternative fuel sources to replace fossil fuels across the Group's operations. As well as hydrogen and bio-derived fuel trials in the UK, research is underway elsewhere in the world to identify sources of such fuels.



Greengate operations, St Helens, UK



Flame appearance in a furnace with a fuel blend of 80% natural gas and 20% hydrogen.



Flame appearance in a furnace with a 100% hydrogen fuel blend.

Other initiatives.

To help realize the decarbonization roadmap, the company is further developing technologies for the electro-melting of glass, alternative raw materials for glass production and carbon capture.

Energy management systems

All plants in Germany, Italy and Finland, as well as the engineering department of the Automotive Glass business unit, are ISO 50001 certified, the international standard for energy management systems. The investment in the installation of sub-meters (hardware and software) has ensured a high level of transparency regarding energy consumption and enabled advanced energy planning through improvement activities, target setting and frequent reviews.

Procurement of renewable electricity

The NSG Group has set a target to increase the share of renewable electricity to 50% by 2024 compared to the baseline consumption share in 2018. Progress towards this target in 2021 was 26%.

In FY22, several specific project activities were initiated. The most significant of these was the signing of a Power Purchase Agreement (PPA) with EDP Renewable Energy (EDPR), the world's fourth largest renewable energy producer, for renewable energy generated by wind farms in Poland. Under the PPA agreement, approximately 100 gigawatt hours per year will be supplied to NSG Poland's operations from a 100% renewable generation facility.



Environment Energy

The technical center in Lathom, UK, utilizes more than 30% of the sites annual electricity demand from on-site solar generation. In addition, the Northwood Technical Centre in North America produces about 7% of its own electricity from on-site solar power. In addition, solar panels have been installed on the roof and former car park of the Weiherhammer plant in Germany.

In FY2022, a new solar on-site power generation facility became operational at the Rossford manufacturing plant in Ohio, USA.

In addition, on-site power generation projects are underway in North America, Malaysia, Japan and several other locations.



Thin film solar panels at Rossford plant

Partnerships with suppliers

We are continuously developing projects in partnership with key suppliers to reduce energy consumption at our manufacturing sites. Various joint projects include the use of energy storage systems to reduce peak electricity demand, improving compressor inefficiencies and installing high-efficiency motors, and making better use of waste heat generated in the glass manufacturing process. For example, the storage batteries installed at the Collingwood plant in North America are NSG's first project in collaboration with storage battery developer Convergent Energy.

The project is designed to disconnect the plant from the grid connection during times of high peak demand. In Ontario, Canada, natural gas power plants produce the energy needed during these peak periods. This project is equivalent to 5 MWh of electricity that the province does not need to produce during these peak hours.



Increased awareness of energy efficiency among employees

An energy management training program designed to reduce the Group's costs and CO₂ emissions continues to be rolled out globally. Launched in 2016, the program has been implemented at sites in Europe, South America, Japan and South East Asia. The first program involved local site energy champions in a 'back to school' initiative to raise the level of energy awareness and support the ongoing generation of energy and carbon management project activities. An important aspect of this training is to help participants understand the approach to energy and carbon management and how they can identify and implement activities at their sites and encourage others to do so. In FY2022, the program continued to be implemented through distance training in response to the Covid19 epidemic. Several individual training sessions were organized to train new Energy Champions and to 're-educate' those who had previously participated. To date, more than 75 delegates have directly participated in this training and more than 300 projects have been identified and implemented. Energy savings have exceeded 130 million JPY and CO₂ emissions have been reduced by more than 4,000 tonnes.

The initiative consists of three levels of training, with Level 1 providing 50 hours of training on all aspects of energy management. After completion of Level 1, participants are encouraged to continue their energy management education at an external institution leading to a Level 2 or Level 3 qualification, depending on their job role. Some NSG Group participants have achieved Level 3 qualifications.

Environment Energy

NSG Settimo site fully decarbonized in Scope 1 and Scope 2 for the first time in the NSG Group

The automotive sector site in Settimo Torinese, Italy, became the NSG Group's first fully decarbonized site, which started in April 2020 and was fully implemented in early 2021, with electricity from certified renewable sources combined with a district heating network. It operates solely on renewable energy. This equates to planting approximately 2,400 trees or taking approximately 1,000 cars off the road.



Heat recovery at the Polish plant.

The Automotive OE site in Chmielow, Poland, recovers and utilizes waste heat generated at various stages of the manufacturing process; the total energy savings from this four-step project exceed 2.5 GWh per year and the CO₂ avoided due to thermal energy generation is expected to exceed 1800 tonnes.

Introduction of LED lighting systems in factories.

Over the past decade, the NSG Group has been working to improve energy efficiency through energy management projects such as improved lighting, the use of waste heat and innovative manufacturing equipment. The installation of a new LED lighting system at the Gelsenkirchen plant in Germany has significantly reduced energy consumption.

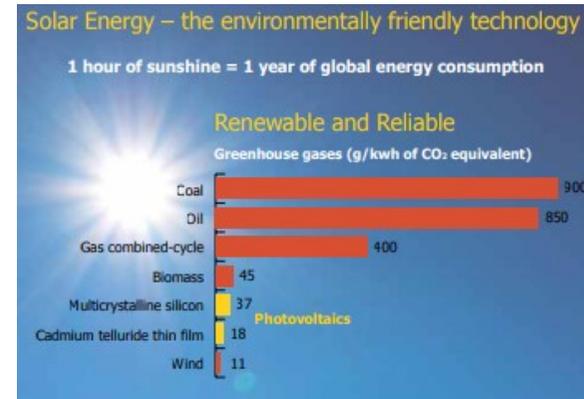


Contribute to the decarbonization of society through our products and services

The NSG Group promotes the introduction of alternative energies such as hydrogen in its manufacturing processes and actively contributes to the decarbonization of society through the supply of products to the renewable energy market and the development of energy-saving products.

Solar panel

Solar cells are an alternative solution for a wide range of energy demands, from small households to large solar power plants, and glass is an integral and important element of these solar panels. Our wide range of high-quality products are used in the three main solar cell technologies for converting solar energy into electricity: thin-film solar cells, crystalline solar cells and concentrating solar cells. Our glass products are also used in solar cells that not only generate electricity but also produce hot water.

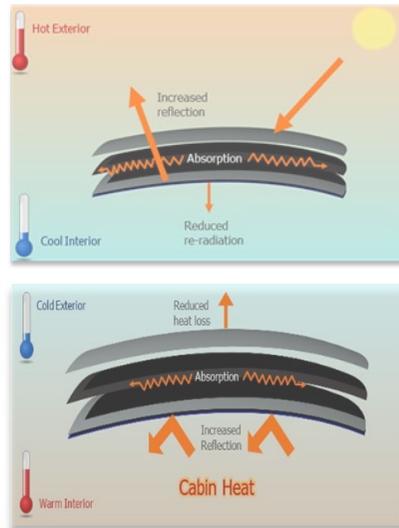


Solar energy is one of the most viable, renewable and clean sources of power generation among the low-carbon technologies available today

Environment Energy

Solar control - low-emissivity roof lights

NSG Group has provided the first high-performance solar control rooflight that provides comfort inside the vehicle under both summer and winter conditions. Low emissivity coatings and special solar absorbing interlayer laminates allow the blind system inside the vehicle to be removed, saving energy as well as weight and cost.



Low-e coatings reduce the amount of outside heat absorbed by the glass and emitted into the vehicle in summer, while in winter they reflect heat from inside the vehicle and reduce the amount of interior heat emitted outside. This reduces the heating and cooling load.

Contribution to decarbonization in buildings

In response to customers' needs for decarbonizing buildings, the NSG Group is actively innovating in the building sector, developing, for example, insulating glass, solar control (thermal barrier) glass and BIPV (Building-Integrated Photovoltaics), which generates electricity through the glazing in buildings. For more information on each of these initiatives, see our website.

New high-performance glass products that contribute to reducing society's environmental impact

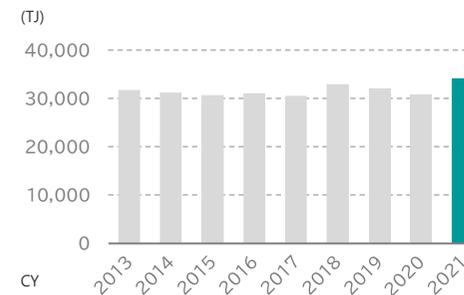
In FY2022, we began offering MAGNAVI™, a new high-performance glass fiber that contributes to reducing the environmental impact of society. MAGNAVI™ was created through environmentally friendly product development, using raw materials with a low

environmental impact and also reducing energy use and CO₂ emissions during production. In addition, it is expected to contribute to the reduction of carbon dioxide emissions by taking advantage of its superior properties such as strength and high elasticity compared to conventional glass fiber and applying it to environment-related technologies such as automobile and aircraft components and, in the future, wind turbine blades.

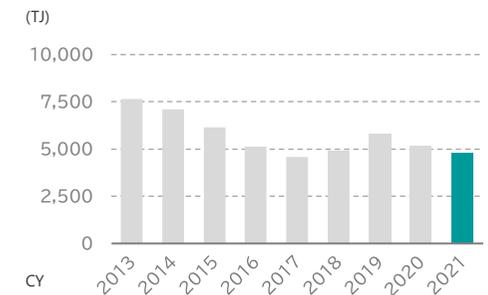
NSG Group energy use and carbon emissions

In the interests of the environment and costs, natural gas continues to be used as a fuel for glass melting wherever possible. The furnaces are in the process of being converted from heavy fuel oil to gas, and small amounts of diesel and LPG are used in the heating system and back-up generators. See graphs for consumption details.

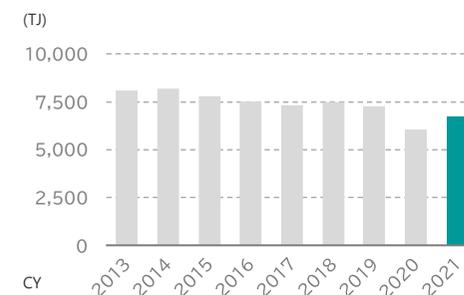
Natural gas



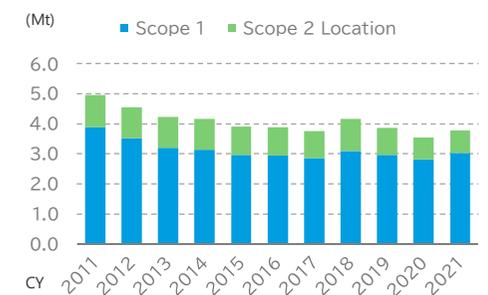
Heavy oil



Power



Carbon emissions



Environment Water

Water utilization and Water management

In glass-making, water is used for cooling, and most of our plants operate with closed loop 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 re-circulated. We seek to minimize our water consumption by working with suppliers to recycle water and to install advanced water treatment facilities. Processes are managed by Manufacturing Excellence's standardization procedures (eg turn off washer sprays when not needed, use optimal sized nozzles, install water catchers, implement controls to prevent overflows and maintain to prevent leaks, etc). This not only reduces the withdrawal 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 2.6m³ are required to manufacture one tonne of float glass and approximately 0.12 cubic meters are required to process each square meter of automotive product.

We withdrew a total of 16.0 million cubic meters of water in 2021. This a similar quantity as in 2020; higher glass production outputs have been compensated by an improved water utilization efficiency.

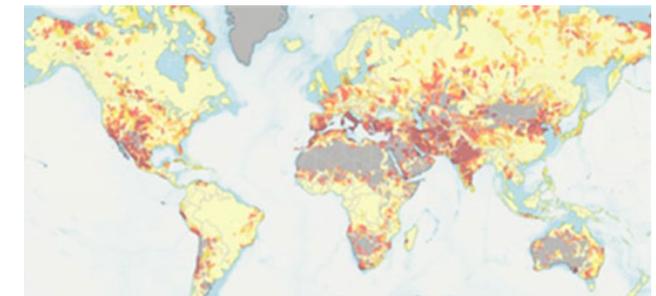
Water risks

We do not have any current stakeholder concerns regarding water scarcity or waste water quality. On the other extreme of water risks, flood planning and prevention strategies have been applied where indicated. Water risks do not register as significant in the NSG Group risk assessment process, however, we will continue to risk assess all facilities. The NSG Group Sustainability Committee is the global forum of the senior management to review the risk and performance and to discuss related activities on water management.

The NSG Group has implemented a new Water Policy to ensure a clear statement of NSG Group's approach to water stewardship and in order to address water quality challenges and the risks of water scarcity in support of the Group Sustainability and Environmental Policies.

In 2019 the NSG Group implemented a new and more sophisticated Environmental Reporting and Analysis database. All sites are reporting their specific information

and water data into this central database for further aggregation, analysis and monitoring on corporate and site level. Our 2021 data reporting and reviews highlights that 9 NSG sites are located in water stressed areas in accordance with the global Aqeduct Water Risk Atlas. The water withdrawal at those sites represents 3% of the total in 2021. Those sites are subject to prioritized water management reviews and improvement activities.



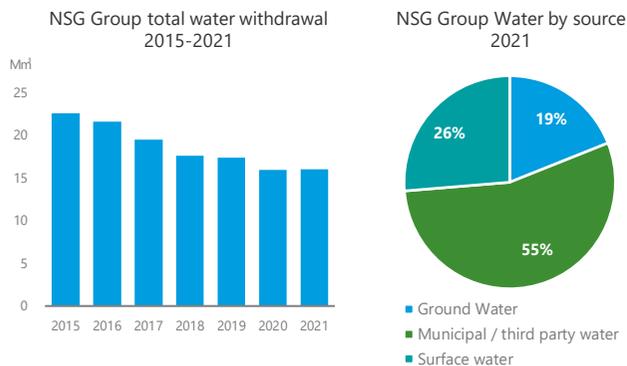
Water stress map - source: Aqeduct Water Risk Atlas

Water saving Projects

Amongst other good water saving projects, the water project at the San Salvo plant in Italy is extremely successful. The San Salvo plant is located in a potentially water stressed area at the east coast in southern Italy. Most of the utilized water for equipment cooling, glass washing and steam generation comes from a nearby river – with potential water scarcity in hot summer periods.

The recent improvement project had 3 steps: Better water utilization, reuse optimization and the use of rain water. All 3 steps lead to an overall reduction of water extraction

from the river by 82% (~1 Mm³ per year) in 2021 versus the project baseline of 2019. The saved water from the river is now used by the local water supplier to produce drinking water for the local Community.



Step 1

Better Water Utilization

Washing Machines consume Water only when it is needed!

Step 2

Water Reuse increasing and flow optimization

New water recovery system is completely automated and maximize water reuse!

Step 3

Raining Water Reuse

With this system is possible to reduce water consumption to ZERO!

Social Shift and Innovation – R&D Strategy

1. Background

In 2018 the Group announced, “Our Vision”. In the process of formulating the mid-term management plan Materiality was redefined.

Five items were identified as Materiality, to attain sustainable growth of the Group and contribute to a sustainable society in the medium to long-term. The Group selected these five items according to their significance as assessed on a matrix measuring the impact on both society and the Group.

2. “Society Shift and Innovation” is one of those five items

Our aspiration is to satisfy our stakeholders as we identify and interpret significant challenges to society.

We will innovate in a timely manner to provide technology/product/service to the solution of those challenges. Revenue will increase as a result. To facilitate this, we will strengthen business development and the R&D function.

The focus of R&D’s approach to this important aspect of Materiality is guided by business strategy and the three areas of contribution set out in NSG Group’s Medium-Term Vision

1. **Safety & Comfort: To create people-friendly surroundings and a living space that is pleasant, safe, and healthy**
2. **Eco Society: To create an eco-friendly world by various contributions such as a shift to renewable energy and lowering the usage of air-conditioning and heating**
3. **Information and Telecommunication: To contribute to the development of information and telecommunication technology to make people’s lives more convenient and to support the advancement of the society.**

Within these focus areas we are concentrating our resources and investment on those core technologies where the group excels and where we can dominate the competition.

Funding and allocation of resources is managed in a well-balanced and cost-effective way with priorities set in collaboration with each SBU.

3. R&D Policy

NSG has a long and successful record of developing and exploiting core technologies including areas of distinct competitive advantage such as float glass, coatings, glass fibers and flakes and automotive glazing fabrication.

Increasingly NSG is working in partnership with others to develop basic science and to enable us to investigate emerging technologies relevant to our core competencies. The breadth of involvement ranges from long term partnerships with leading Universities to facilitating start-up companies by offering access to NSG facilities.

The business plays an active role in the prioritization and planning of the project portfolio at a regional and global SBU level. In addition, executive reviews allow members of the management committee to monitor and guide R&D contributions to the Group.



Mike Greenall

Chief Technology Officer

Social Shift and Innovation – R&D Strategy

4. R&D Activities by Three Areas of Contribution

(1) Safety & Comfort

NSG's products contribute to user comfort and safety in many ways.

In buildings, both residential and commercial, glass plays a vital role in occupant comfort by helping to control temperature and light. The R&D function continues to develop new markets to allow the group to meet the different needs of climate zones around the world. Last year for example we launched an improved Energy Advantage™ product designed for the Canadian market to meet changes to the Canadian Energy Star rating system. And we developed and launched a new Pilkington Eclipse Advantage™ product with reduced shading coefficient, to meet a revised Dubai code frequently specified in the middle eastern markets.

In Automotive R&D has been working with our manufacturing teams to further enhance our UV and IR absorbing coatings that are popular in the Japanese market. Recent independent benchmarking has confirmed the NSG product as market leading for performance and durability.

Automotive safety glass has for years been designed to protect the vehicle occupants. Recently attention has also turned to the safety of pedestrians and cyclists that may be impacted by a vehicle. The World Forum for the harmonization of vehicle regulations (WP.29) will adopt a series of measures to improve safety, including an update to Regulation R127. This will adopt the requirement to extend the impact test zone to include windscreen between the A-pillar area. R&D has been working with car makers and legislators to ensure that our product range meets this important new regulation that will contribute to a reduction in road traffic injury.

Again, in Architectural applications NSG offers a wide range of fire-resistant products at different performance levels. R&D uses its in-house fire test facility in Germany to develop improvements to our product range. We also work closely with customers who can test their framing systems in our facility before submission for formal test approval.

(2) Eco Society

NSG's products have a very beneficial impact on the environment. This is particularly true of our transparent conductive oxide coated glass that is extensively used in thin film Photovoltaic devices. Continuous improvement to the NSG product gives direct improvements to PV cell efficiency.

Within the PV field perovskites are making a name as a potential route to low-cost high efficiency modules. Several customers are using NSG thin film coatings as the base layer for their modules. We are working closely with perovskite developers to tune our coating to their needs.

We see an enormous opportunity to retrofit existing buildings with superior glazing materials that will improve thermal efficiency. Pilkington Spacia™ is a vacuum insulating glazing that is around 30% of the thickness of a standard insulated glazing unit. It can be installed in thin frames and is particularly attractive for historic building renovations.

Providing food to the world's growing population, whilst dealing with crop yields that are increasingly affected by climate change, and disruption to logistics chains is a challenge for mankind. We see increased interest in glazing products for Horticultural glass houses. Traditionally these were low value commodity glass or even plastic. But growers are becoming increasingly informed by scientists about the benefits of light scattering and spectral selectivity. This presents new opportunities for VA products and NSG R&D is working with universities to better understand how we can develop tailored products to complement our existing NSG Botanical™ product range."

An important focus of R&D within our architectural business is to research and develop technologies to reduce our energy consumption and carbon emissions. We are particularly conscious that we need solutions that achieve real reductions when considering scope 1, 2 and 3 emissions. A significant part of the overall R&D program is dedicated to this theme. We are also leveraging the input of technology partners.

Traditionally, methane or Fuel oil has been used to provide the energy needed to melt raw

Social Shift and Innovation – R&D Strategy

materials to produce glass. Inevitably the burning of fossil fuels leads to significant Carbon emissions. So, we have been investigating alternative non-fossil fuels such as Hydrogen or Biofuel. We have successfully manufactured architectural glass at our facility in the UK, using hydrogen power in a world-first trial in September 2021 and received many responses from stakeholders. Also, in 2021 we demonstrated in a long production trial that Biofuel is a good substitute for Fossil fuel.

In addition to the substitution of Methane and oil we are investigating the extent to which renewable electricity can be used to directly melt glass. Small amounts of electrical heating have been common for many years. We are using computer modelling to simulate the addition of significantly higher levels of electrical boost with a planned implementation during a float line repair in 2025/6.

We are looking at alternative glass making materials and are helping the group to identify new sources of glass cullet from non-traditional waste streams. Aside from Silica, the main constituents of NSG's flat glass are the Oxides of Sodium (Na_2O), Calcium (CaO) and Magnesium (MgO). Historically it has been convenient to use commonly available carbonate minerals Na_2CO_3 , CaCO_3 and $\text{CaMg}(\text{CO}_3)_2$ in the glass batch. These minerals are mixed with silica and then melted at high temperature. In the process of melting, carbon dioxide (CO_2) is emitted as the minerals transform. If we substitute carbonate minerals with Oxides in the glass batch, we can avoid this substantial emission of CO_2 . And as an additional benefit less energy is needed to melt the glass batch. Oxide minerals are less readily available currently, but in 2022 NSG successfully produced glass at our float line in Chile using a raw material called Dolime (CaOMgO). Further production campaigns are being planned for 2023.

Cullet is the name given to glass that has been crushed after recovery from a waste stream. It is very useful for glass making as it requires much less energy to remelt cullet than it does to make glass from scratch. Working together with partners we are looking at innovative ways to access new sources of cullet. e.g. from building renovations schemes.

We should not forget to mention carbon capture usage and storage. Carbon capture is well proven, but the exhaust gas stream from glass making is not compatible with the most available capture process. We are working with a partner who has developed a novel

process that we believe is compatible with our needs. We are running a trial next year funded by the UK Government. Combined with infrastructure to store or use the captured carbon this technology has a good chance of success.

Overall, our aim is to have a toolkit of technologies that can be applied to meet our validated Science Based Targets.

CT SBU is also active to produce products relevant to Eco Society. Glass fiber is a material that is combined into composite materials to increase strength. NSG MAGNAVI™ is a high-performance fiber with high modulus and specific strength which was launched this year. It offers superior mechanical properties compared with traditional glass fiber; whilst maintaining glass fiber properties such as heat resistance and radio wave transmission. MAGNAVI™ was developed to be produced using environmentally friendly materials, CO_2 emissions were designed to be low. MAGNAVI™ can be applied in environment-related technologies, such as components for vehicles and aircrafts, and in the future, wind turbine blades to aid CO_2 reduction by decreasing the weight of composite components.

Social Shift and Innovation – R&D Strategy

(3) Information and Telecommunication

The R&D function is taking a lead within NSG to master new digital tools such as AI and Machine learning. We are using it to develop new materials and new insightful controls for our manufacturing processes. We are making extensive use of partnerships with world leading universities and national centers of excellence in this exciting field whilst at the same time training our scientists to use these tools effectively.

In automotive NSG continues to supply customers with design and validation of on glass antennae. This field is digitalizing rapidly. We have been continuously working to improve our simulation capabilities to shorten development time and reduce the amount of in vehicle tests.

CT SBU has recently developed a brand-new lens called SLA-5DG™ to meet the rapidly growing demand for the industrial inspection market where digital techniques are replacing human inspection. With twice the depth of focus (DOF) of the conventional SLA, the new lens array can be used in an even wider range of machine vision applications

The NSG Group has collaborated with a third party to create new glass applications that deliver power or data to devices without the need for wires. The TCO coated glass acts as an invisible wire carrying current to apertures, or contact points, on its surface. The collaboration has a vast array of applications for designers, architects, and engineers to locate powered devices within transparent structures. Early applications have included retail, where in-store display stands can wirelessly charge electronic devices such as mobile phones and cameras; and in automotive, to power head-up display screens that are embedded in a vehicle's windscreen.

5. Intellectual Property Policy

The Group recognizes the importance of Intellectual Property (IP) in pursuing its business objectives and maintaining a competitive edge in its technical areas of expertise.

The Intellectual Property team works closely with R&D and the SBUs to align our patent strategy with our business and R&D strategies. They actively manage the Group's IP portfolio paying particular attention to patents which are closely connected with our core and strategic businesses.

Intellectual Property Rights for product developments and process technology developments are secured, maintained, and vigorously enforced.

The Group continuously monitors Third Party IP in its business field. Where appropriate, the Group will oppose the grant of such IP and will vigorously defend itself against unfounded allegations of IP infringement.

Going forward, we try to improve patent quality, and obtain intellectual property rights that will better serve the interest of businesses.



Safe and High-Quality Products and Services

Our Aspiration



Our NSG Vision is through innovation to become the most trusted partner in all industries that we work in. Our commitment to the delivery of Safe and High-Quality Products is of material importance to the achievement of this goal and this is reflected in our new Group level quality policy. Our supporting programs focus on three key areas:

- **Consistent Customer Satisfaction**
- **Right First Time Product and Service Introduction**
- **Operational Excellence**

Safe and High-Quality Products and Services

Consistent Customer Satisfaction

As a foundation for achieving consistent customer satisfaction and as the 1st Line of defense against our product quality risk NSG Group operates with management systems certified according to ISO9001: 2015 and IATF 16949 in all Strategic Business Units. NSG management systems are reviewed through a range of external and internal audits.

Our Manufacturing Excellence team provides a 2nd Line of defense with additional monitoring of quality topics and creation of Group wide standards in key areas of risk. NSG Group Internal Audit team acts as a 3rd Line of defense focusing on risk based audits of Group quality standards.

NSG Group has aligned its internal communication and categorization of quality incidents with the approach taken for safety incidents. This is supported by the introduction of quality incident rate (QIR) metrics at Group level to monitor performance and guide global improvement activities.

*A measure of the occurrence of quality incidents with financial impact > 0.01 Oku as a ratio of sales



Safe and High-Quality Products and Services

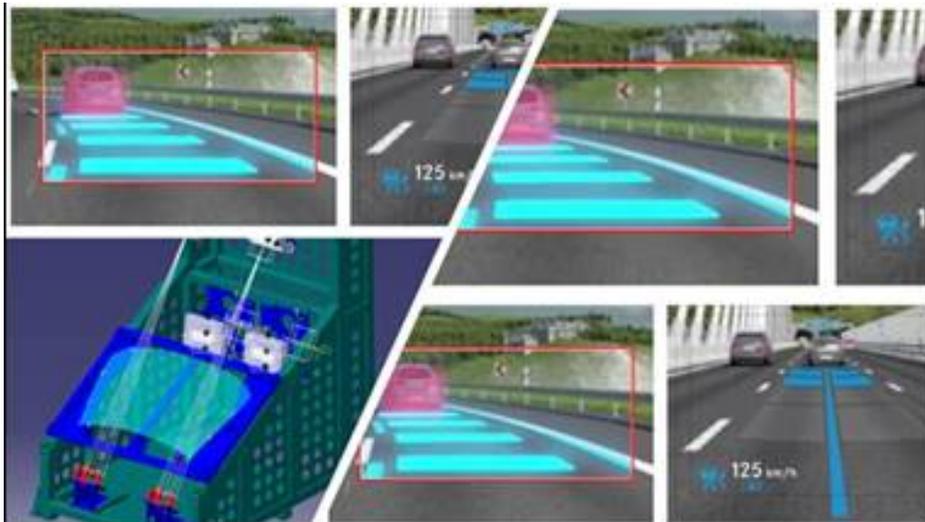
Pass Only Good Glass

The NSG key initiative to drive quality improvement is "Pass Only Good Glass" (POGG). The goal of the Pass Only Good Glass program is to improve quality and yield performance by stopping and preventing defects at source. This protects our customers and also allows us to focus on internal cost reduction.

The Pass Only Good Glass program utilizes a toolbox of quality improvement methods within a structured approach working across the whole production environment.

Prevention of defects using statistical process control and the implementation of automatic inspection systems for monitoring of key quality characteristics are two focus areas for POGG.

For example, the Augmented Reality Head Up Display (AR-HUD), a technology which allows us to follow the navigation system in our field of view and offers relevant information in real time, requires high quality windshields. By controlling the quality of characteristics of the glass using automatic inspection systems, NSG provides our customers with the high quality windshields required for AR-HUD.



Quality Inspection of Windshields for HUD Display using Automatic Inspection Systems (AIS)

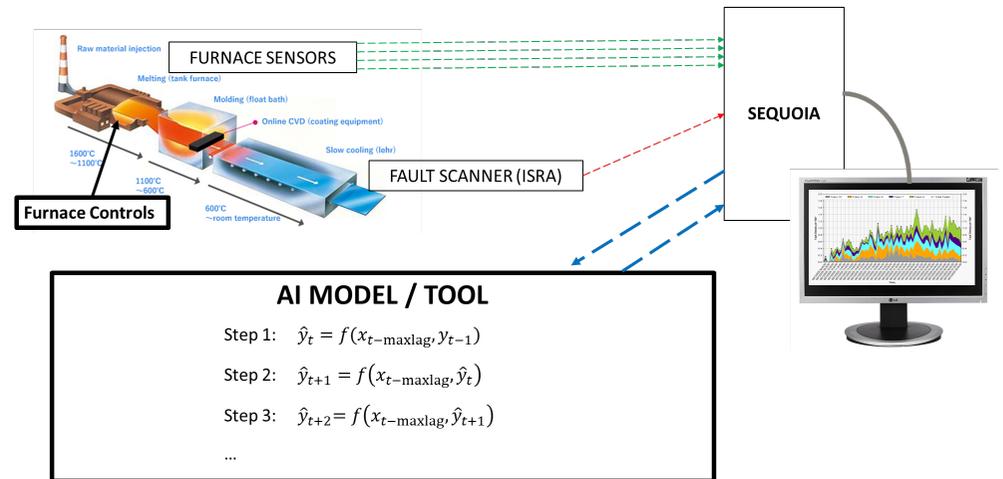
Operational Excellence

Our global Manufacturing Excellence focus drives improvement in our operations and the products and services we supply, guided by identification of the risks within our internal and external environment. ME360 is the NSG standard program to improve operations towards excellence. Sites complete a regular self-assessment against the ME360 criteria and develop a Manufacturing Excellence Improvement Plan (MEIP) based on their needs.

NSG is pursuing digitalization as a key part of our manufacturing improvement activities, through sharing best practice examples around the Group and collaborating with a range of organizations to find innovative solutions to existing challenges.

NSG operates an inhouse Manufacturing Execution System "Sequoia", which has been a strong foundation for our flat glass manufacturing operations for many years but is now being expanded to encompass a wider range of processes and tools, for example through the development of a prototype AI model for furnace control.

AI Model/Tool 1



Development of an AI model for furnace control

Suppliers

Overview of the Supplier Code of Conduct.

The Supplier Code of Conduct sets out the behaviors, processes and procedures that suppliers must follow and outlines the minimum standards we expect from our suppliers. Its contents have been communicated to all existing and new suppliers and we have obtained agreement to the Code from most of our key contracted suppliers.

The Code of Conduct includes key areas such as Anti-Forced and Child Labour, Dealing with Conflict Minerals and Anti-Bribery and Corruption, and all NSG suppliers are responsible for following the principles of the Code.



Supplier engagement in 2021.

The NSG Group has been implementing energy efficiency programs through mutual global cooperation across the Group for almost a decade.

In 2021, we launched a new project focused on Scope 3 emissions and engaged with key suppliers to better understand supply chain CO₂ and to identify and share best practice with partners. This has resulted in improved accuracy of data collection and an increase in Scope 3 emissions reported in 2021 and 2020, with details of Scope 3 emissions by category in 2021 as shown in the chart below.

Scope 3 CO₂ emissions

Category	CY2021 (tonnes)
1. Purchased Goods & Services	1,938,669
2. Capital goods	4,000
3. Fuel & Energy related materials	587,759
4. Upstream transportation & Distribution	-6,143
5. Waste generated in Operations	12,055
6. Business Travel	443
7. Employee Commuting	2,000
8. Upstream leased assets	0
9. Downstream transportation & distribution	168,300
10. Processing of sold products	600,000
11. Use of sold products	0.14
12. End of life treatment of sold products	37,053
13. Downstream leased assets	0
14. Franchises	0
15. Investments	200,000
Other	0
Total all 15 categories	3,556,368

To reduce emissions in the supply chain, the NSG Group has undertaken a number of initiatives. For example, for raw materials, which account for around 15% of the Group's total CO₂ emissions, we have worked with key raw material suppliers to identify low-carbon raw materials, which have been successfully tested on a large scale on our South American float lines. We are also continuing to reduce carbon emissions in our supply chain by encouraging key raw material suppliers to shift to alternative fuels and promoting modal shifts in transport.

Contracts with suppliers

The NSG Group aims to establish clear and mutually beneficial business relationships with its suppliers of materials and services. We believe that this is best achieved by entering into appropriate contracts with all suppliers. All supplier contracts must be properly managed and approved within the NSG Group.

The NSG Group and its affiliates (as defined below in PCP2) define their business relationships with suppliers by the most appropriate contractual terms and conditions. For many suppliers, this refers to our Standard Terms and Conditions of Business (PCP2, issued in 2008).

The master version of the PCP2 is the English version. For the convenience of suppliers in different countries, PCP2 has been translated into other languages, but where there are differences of opinion, the English version will be referred to.

Suppliers

Sustainable supply chain

Supplier development.

The NSG Group monitors its suppliers' ESG rating indicators (KPIs) through EcoVadis* (an external organization that assesses supply chain ESG performance) to continuously improve the sustainability of its supply chain. The EcoVadis rating coverage of our key suppliers (based on weighted average purchase value) has steadily increased over the past three years, as shown in Figure 1 : 51.8% last year, compared to a target of 65% in 2024.

In FY2022, we also focused on suppliers with low EcoVadis scores and worked towards improving their scores. As shown in Figure 2, the overall average score increased from 55 to 59 and the number of low-scoring suppliers decreased. These results suggest that our strategy has been successful.

Figure 3 shows the scores by category for the key EcoVadis themes: environment (ENV), labour and human rights (LHR), ethics (ETH) and sustainable sourcing (SUS). The number of suppliers with low scores has decreased compared to last year, showing an improvement in supplier scoring.

fig1 3 Year Performance against Recovery Plan 24 Valid Scorecard Spend %



fig2 FY22 - EcoVadis Score Distribution

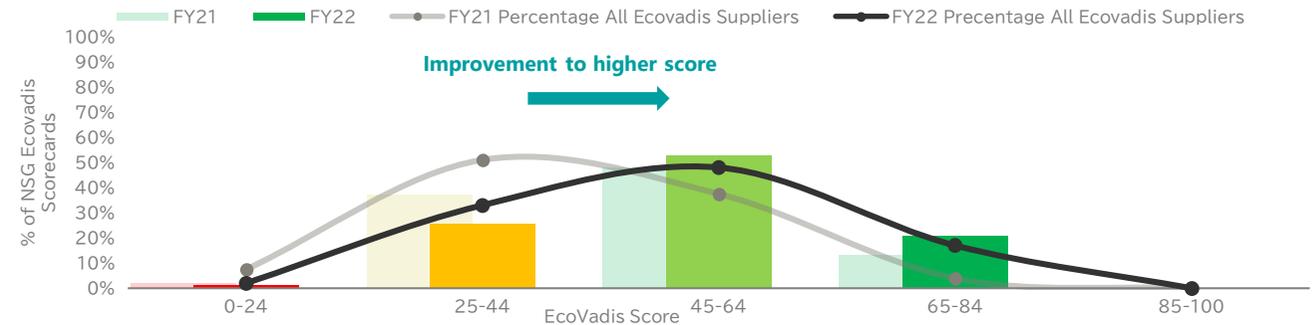
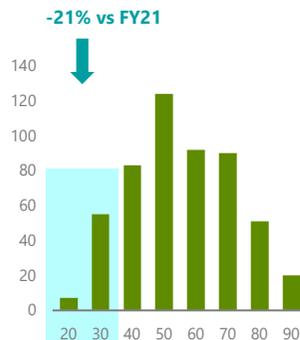
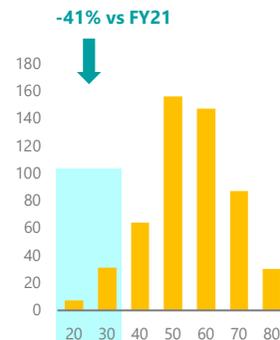


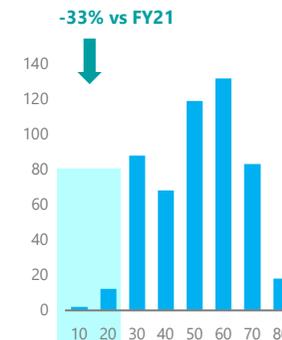
fig3 ENV Score Distribution



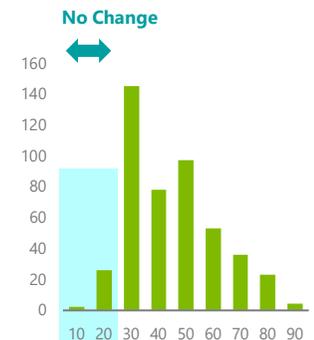
LHR Score Distribution



ETH Score Distribution



SUS Score Distribution

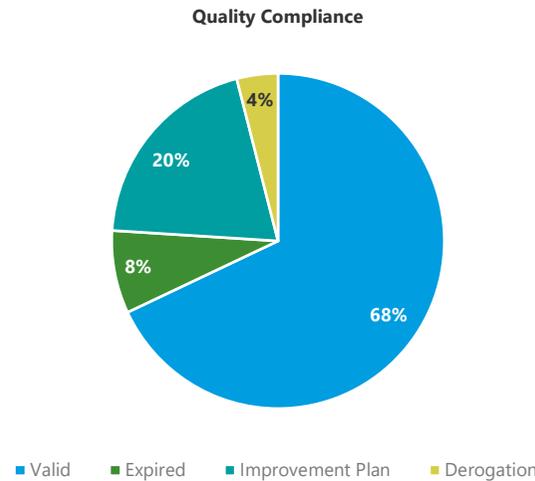
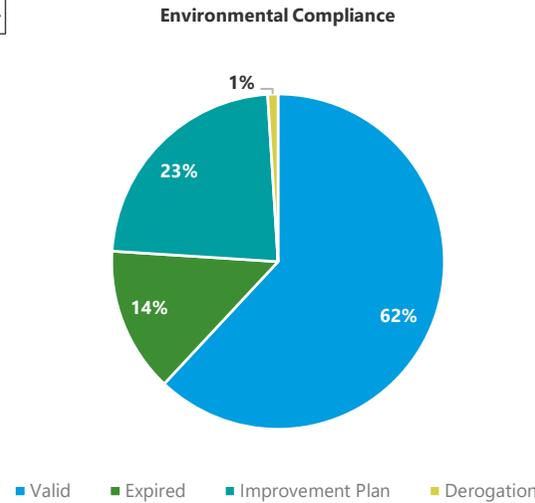


Suppliers

Special attention is paid to suppliers with a potentially significant impact on the environment (HEI: High Environment Impact). Suppliers in the HEI categories such as wood packaging, chemicals, etc. are required to sign and comply with a Supplier Code of Conduct, obtain ISO 14001 or equivalent national environmental certification and/or EcoVadis assessment, and for wood paper and corrugated packaging materials we strive to minimize the negative environmental impact of these suppliers by requiring them to obtain Chain of Custody (CoC) certification from the Forest Stewardship Council (FSC) or PEFC forest certification programs for their raw material suppliers, for example. Supplier compliance status in terms of environmental aspects, such as ISO 14001, forest certification and EcoVadis scores, and in terms of quality, such as IATF 16949 and ISO 9001, is shown in Figure 4.



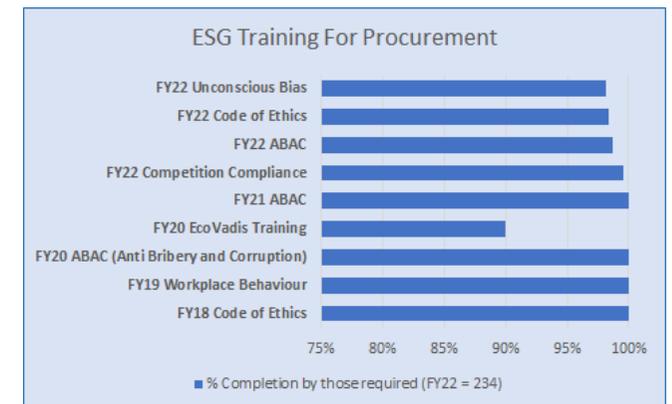
fig4



ESG targets and training

NSG's Procurement Team, from Executive Directors through all levels, have S.M.A.R.T objectives (Specific, Measurable, Achievable, Realistic, Timely) related to the sustainability activities described above. They are also required to attend various training courses on ESG items such as NSG Code of Ethics, Anti-Bribery and Anti-Corruption (ABAC), Competition Compliance and, more recently, Fraud and IS Security. Figure 5 shows the training modules and progress. In addition, with the support of our long-term partner EcoVadis, we are conducting formal ESG awareness training sessions, including practical assistance on platform functions.

fig5



Suppliers

Strategic approach to sustainable supply chains.

In 2022, we launched a project to transform the way we approach sustainability in our supply chain.

The project aims to,

- **Align the supply chain sustainability strategy with the NSG Group's sustainability objectives**
- **At the very least, ensure that we meet our customers' expectations and comply with the legal requirements of all regions in which we operate.**
- **Ensure that NSG is recognized as a leader in sustainability in the supply chain**
- **Assist in attracting and retaining NSG personnel**
- **Follow international standard, ISO 20400: Principles of sustainable procurement.**

As a first step, as part of establishing and developing a sustainable supply chain, we are working on a Supplier Charter, which outlines the main points of our objectives and commitments. The Supplier Charter also describes the commitments required of suppliers and the KPIs used to measure progress .

We are also accelerating our efforts to meet our Scope 3 carbon emissions target of a 30% reduction. The maturity of ESG targets in procurement is shown in Figure 6. This requires a cross-functional approach and involves many members from different divisions. It is reported and progress managed by the Group-wide Sustainability Committee, chaired by the CEO.

External evaluation in FY22.



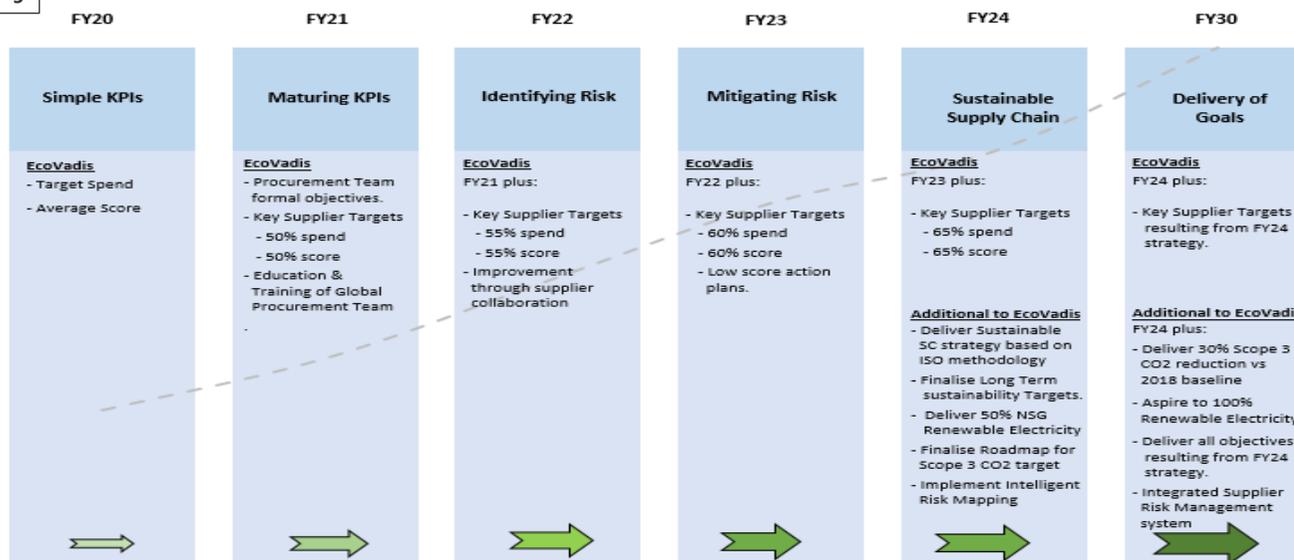
2021

We are delighted that our efforts to work with our suppliers to improve in the area of ESG have been endorsed by an external assessment. We have been recognized as a leader in supplier engagement in the latest CDP assessment in CY21. This places us among the top 500 companies worldwide (out of a total of more than 13,000 companies assessed), including 105 from Japan. CDP is a non-profit organization that manages a global disclosure system for investors, companies, cities, states and regions to manage their environmental impact on climate change, water security and deforestation.

We use EcoVadis to cover and assess not only our procurement base, but also the requirements of our customers and investors. On the subject of 'sustainable sourcing', we have managed to raise our score from 60 to 70 out of 100 points. This places us in the top 3% of the glass industry.

fig6

Group Procurement – ESG Objective Maturity



Sustainable Procurement score distribution



Ethics and Compliance

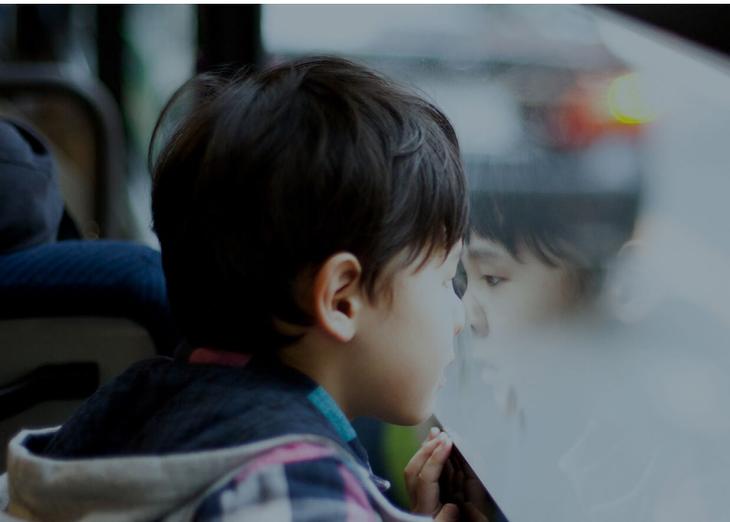
Transparency In All That We Do

Working ethically and safely is essential for NSG Group to be sustainable.

NSG Group has in place the Group Ethics and Compliance (E&C) function and implements ethics and compliance programs in accordance with “Fundamental Policies of the Company on creation of effective internal control system of the Group” established by the Board of Directors.

The Group E&C function supports the Group in achieving its goals by assessing and analyzing ethics and compliance risks and establishing ethics and compliance programs that align with the Group's strategic goals to ensure the success of our business.

In line with these objectives, more specific key performance indicators (KPIs) have been developed to help measure the effectiveness of the ethics and compliance program on page 32.



Code of Ethics and Education

The [NSG Group Code of Ethics](#) broadly covers the ethical behavior expected of our employees in the work place, including compliance with all laws and all major Group policies, procedures and guidelines. The Code is available in all 19 Group languages.

The Group's new employee education is to cover not only the Code of Ethics, but also conflict of interest, fraud and IS security. Even for other existing Group employees, the fraud and IS security educations are mandatory. Key Roles for competition law compliance (CC) and anti-bribery and anti-corruption (ABAC) are also required to complete the relevant online education. The education modules will be assigned to the Group employees accordingly through the NSG Group Ethics and Compliance Education Center. We will continuously monitor its effectiveness as well as the completion rate of the educations.

Ethics Network

A Global Ethics Network is aimed to enhance the ethical culture and monitor compliance risks throughout the Group. The Ethics Network consists of senior managers who have been appointed Regional Ethics Ambassadors and Ethics Champions. Both roles will play a vital part in the communication and promotion of the Code of Ethics by leading and championing ethics and compliance in their local region or function which in turn will help embed ethics into the business.

FY2022

1,079

New starters completed the training packages at their onboarding

FY2022

4,390

Key Roles completed the CC and/or ABAC trainings accordingly

47

Ethics Ambassadors across SBUs and Functions all over the world

Ethics and Compliance

Group E&C Function and Communication

Group E&C has a direct reporting line to NSG Group Audit Committee. Its 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 E&C function has regional structure with E&C regional managers in Europe, North America, South America and Asia to embed E&C culture into the whole organization as well as cover risks in each region. In this regard, Group E&C puts importance on local communications even online during the COVID situation to reach out to local business/function people, liaising with the relevant Ethics Ambassadors and Champions.

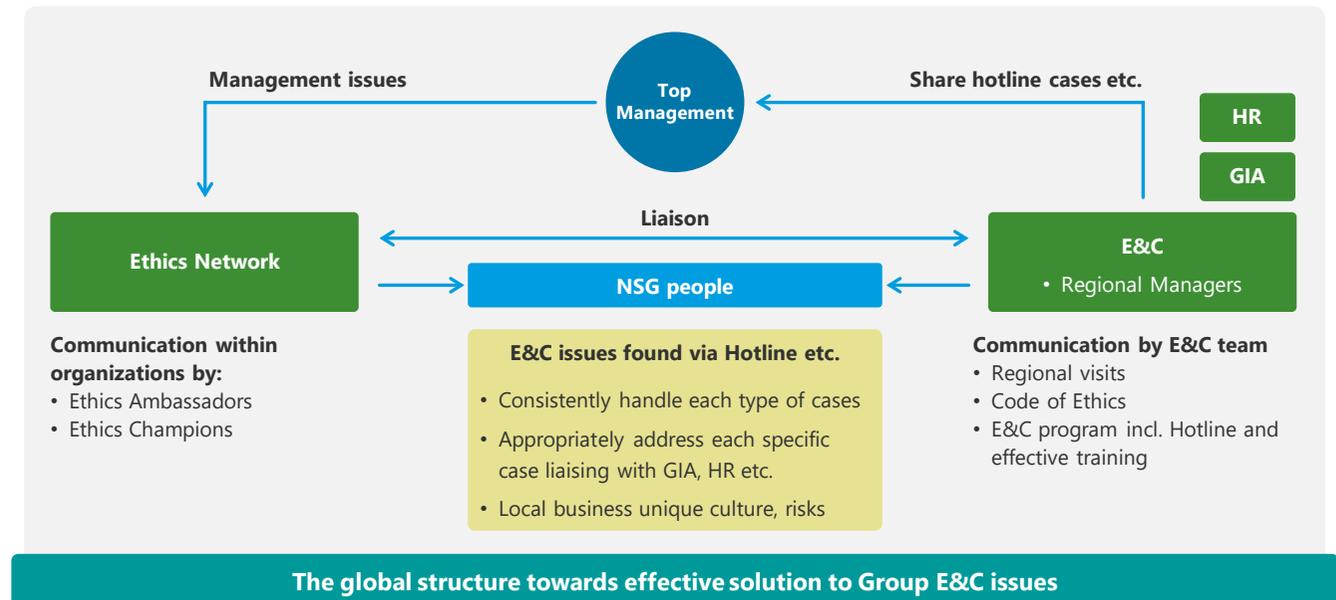
The Group has set Ethics and Compliance Week every year since FY2022, which reconfirms our commitment to ethics and compliance, raising awareness of its significance for the Group business. Various events are held throughout the Group organizations such as message videos from the executive officers and senior managers including C-suite, daily communications, regional activities and relevant online educations during the Week. The concept last year was "Back to Basics." The basic concept and requirements under the ethics and compliance programs and their significance for the Group businesses were communicated to the employees worldwide throughout various channels. In Asia, one of the high-risk regions, the Group implemented a E&C survey to directly listen to employees, receiving cir. 1,300 responses. The Group shared the specific concerns and questions raised in the survey as well as the answers or possible approach to them on its

Intranet site.

The concept this year is "Make Respect Visible." Respecting each other is crucial for us to accomplish each assigned task effectively and efficiently as a team so that we can achieve the business targets. However, we have experienced that respectful behavior or attitude toward others tended to be invisible at workplace, that likely gave rise to poor communications, relationships and work environment, leading to harassment issues in some cases. We focuses, therefore, on making respect visible this year.

Group E&C periodically issues Group Ethics and Compliance Briefings to employees. The Group's communications team translates the briefing into multiple languages and distributes to all NSG Group locations, which is also made available on the Group's Intranet. In addition, each regional E&C manager issues regional E&C newsletter to the relevant local employees.

Group E&C shares with the heads of Strategic Business Units and HR the case details reported via the E&C Hotline system to help improve the workplace environment and even business performance while taking care of its confidentiality.



Ethics and Compliance

Conflict of Interest Disclosure

Under our Code of Ethics, all employees are responsible for acting in the best interest of the Group. Employees are required to disclose any interest, activity or investment which actually or potentially could cause conflict against that of the Group. Group E&C reviews all reported disclosures and discusses certain matters with the relevant business or function managers if necessary. Feedback is provided to all reporters and in some cases, possible plans to mitigate exposure are also provided.

Activities for Competition Law Compliance and Anti-Bribery/Anti-Corruption

Regarding certain high-risk areas in the Group business such as competition law compliance (CC) and anti-bribery and anti-corruption (ABAC), NSG Group establishes and controls relevant policies, procedures and manuals. These internal rules stipulate a wide range of matters accordingly such as specific types of prohibited actions, the necessity and importance of compliance, and the impact of any violations to ensure that the Group conducts business in compliance with relevant laws of all countries where we operate.

There were no violations of competition law and anti-bribery and anti-corruption law in FY2022.

As mentioned in "Code of Ethics and Education" above, employees who meet the Group's criteria for CC and/or ABAC risks are appointed Key Roles accordingly and required to complete the relevant online educations at onboarding and annually, which includes explanations of

the applicable laws and regulations and internal policies and requirements under the ethics and compliance programs as well.

Further, to ensure transparency of employees' actions, NSG Group policies provide reporting requirements about CC and ABAC. Group E&C centrally manages an online reporting system where employees are required to document or obtain prior permission from Group E&C whenever they contact our competitors, join a trade association (CC risk controls), make charitable contributions, give or receive certain amount of gifts and entertainment, do businesses with third parties, and interact with public officials (ABAC risk controls). E&C regional managers confirm or approve the specific requests and notifications considering their regional or countries' risks.

NSG Group is monitoring around 500 third parties such as agents, consultants and joint venture partners that meet certain risk criteria of ABAC. This process includes due diligence, assessment and reputational screening.

Reporting of Concerns – Ethics and Compliance Hotline

NSG Group is committed to maintaining an environment in which employees can report, without fear of retaliation, any conduct they know of or suspect to be in violation of law, Group Code of Ethics policies/procedures or guidelines.

For this purpose, [the Ethics and Compliance Hotline system](#) provides an easy and simple way to report concerns, while employees are encouraged to speak to line management, HR or other relevant functions first.

This Hotline system is also available for any stakeholders outside the Group.

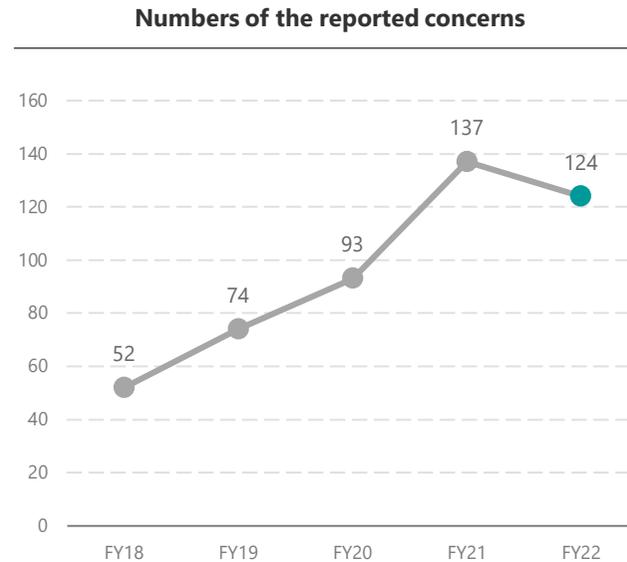
Hotline	Open to third parties
	Anonymous report is acceptable unless prohibited by law.
	7/24/365/Multiple languages
	Toll free
	Anyone can ask questions.
	Operated by a qualified third party with a data privacy module

Managers who received the report from their colleagues must file the designated reporting form (Manager's Report Form) or report it directly to Group E&C if they believe that it has a potential adverse or negative legal, financial or reputational impact on NSG Group.

Since inception in FY2013 there had been 638 reported concerns managed via the Ethics and Compliance Hotline system as of the end of March 2022. FY2022 experienced 124 allegations reported via the Ethics and Compliance Hotline and Manager's Report Form. NSG Group constantly measures the effectiveness of the system by using the metrics against the benchmark region by region.

Ethics and Compliance

Categories of the reported concerns	%
Accounting and Financial Reporting	3%
Misuse, Misappropriation of Corp. Assets	3%
Environmental, Health & Safety	11%
HR, Diversity and Workplace Respect	66%
Business Integrity	17%



We understand that the recent actions have contributed to such increase of the reported cases; such as creation of or revisions to the relevant policies and our constant and continuous communications regarding the Reporting of Concerns System including Hotline through various channels like the aforementioned newsletters and online educations. The Group Policies on Ethics and Compliance and Reporting of Concerns which were revised in FY2021 more clearly define the managers' reporting requirement and the process of the case investigation and its follow-up. We established the Group Anti-Retaliation and Reporter Protection Policy which more explicitly provides that the Group never tolerate any form of retaliation against those who report concerns in good faith.

This global Hotline would be also deemed as "Internal Whistleblowing System" for NSG and its consolidated subsidiaries in Japan in the context of the revised Whistleblower Protection Act of Japan coming into effect on June 1, 2022.

We will continuously strive to embed "Transparency In All That We Do" committing to more open corporate culture.

Reports to Management Committee and Audit Committee

Group E&C reports to not only Management Committee but also Audit Committee which consists of Independent External Directors, periodically or on as-needed basis, on status, progress and issues of the above mentioned ethics and compliance programs.



Human Resources



Executive Officer, Chief Human Resources Officer
Yutaka Nakashima

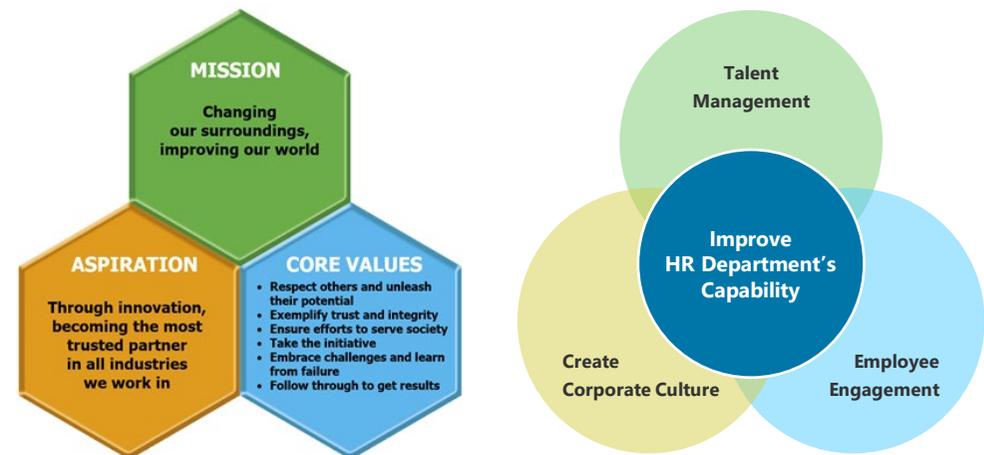


1. Alignment of People Strategy with Management Strategy

1. Management Principles and Four Pillars of People Strategy

NSG Group is addressing “Human Capital” as one of material issues (materiality) defined based on Our Vision, the new management principles set forth in 2018 to attain sustainable growth of the Group and contribute to a sustainable society in the medium to long term. People are the “capital” indispensable for the company to maintain business activities. Group considers having corporate culture, personnel system, and workplace environment in place so that employees can find opportunities to “grow” and “find joy in working” is the goal of “Human Capital Investment” and should strive to enhance the effectiveness and efficiency of such investment to keep driving its growth under the “Human Capital Management”.

NSG Group has instituted the office of Group CHRO to enhance the effectiveness and efficiency of “Human Capital Investment” and identified four pillars of the People Strategy in alignment with Our Vision, i.e. Talent Management, Employee Engagement, Create Corporate Culture, and Improve HR Department’s Capability.



Human Resources

1. Alignment of People Strategy with Management Strategy

Talent Management

NSG Group has always valued Sumitomo’s philosophy of “People are our most important asset” since its establishment in 1918. As such, Talent Management in alignment with Core Values is enumerated as the first pillar of the People Strategy. Among the six Core Values set forth as the basis on which we work and conduct ourselves, “Respecting others and unleashing their potential” is the value we are committed to first. Through Talent Management, we aim to develop employees’ abilities to deliver results in a drastically changing business environment and provide each employee with “opportunities” to unleash their potential to the full.

In 2018, we introduced Talent Management as part of our wider Talent Strategy supporting the Group’s Vision and Values. With this introduction, we migrated key global talent records and data to a new talent management system, while at the same time providing all managers with comprehensive training on talent development processes. Since then, we have continued to expand the use of our Talent Management system, which involved the introduction of our NSG Behavioural Competency model to the Performance Review discussion in 2019. This Competency Model has been integrated globally across our core people processes and become a platform for talent development activities in support of not only Talent Management but Employee Engagement, Create Corporate Culture, and Improve HR Department’s Capability. Moreover, the introduction of Competency Model and Talent Management System has led to an increased

transparency of employees’ performance reviews and succession plans with the management sharing talent data irrespective of countries, regions or business units. This helps to reduce “organizational silos” characteristic to the conventional talent development process and realize more holistic and dynamic Talent Management based on consideration from the groupwide perspective.

Group’s succession plans are developed and maintained by assessing the readiness of candidates on a short-, medium-, and long-term basis while facilitating the nomination of candidates across regions and business units and formulating the subsequent development plans and policies based on such assessment. These plans are reviewed on a regular basis every year. Especially, the succession plan for senior management is discussed annually by the Nomination Committee chaired by External Director with regard to options and activities likely to be taken to improve the quality of the plan, including promotion of candidates’ readiness, development of potential, clarification of concerns and gaps. Also another important way of improving the quality of these plans, we monitor the ratio of succession plans utilized for actual appointments, the diversity of candidates and so forth. (In FY2022, nearly 80% of the senior management appointments was based on succession plans.)

Talent Management



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) ”

Human Resources

1. Alignment of People Strategy with Management Strategy

Employee Engagement

The second pillar of the People Strategy is Employee Engagement, which is aligned with Mission defined in Our Vision. The aim of Employee Engagement is to create pleasant and people-friendly surroundings by embracing the “purpose” of working for each of diverse employees (Inclusion & Diversity) while promoting teamwork and communication at workplace along with the Group’s core purpose of “changing our surroundings, improving our world”.

In specific terms, we roll out a whole host of measures to improve the “well-being” of our people such as promoting the work style reform, ensuring human rights are respected, expediting I&D, providing education and training (reskilling) to acquire the skills needed for the future, and keeping them safe from workplace injuries or occupational illness.

As for people’s work style, NSG Group strives to improve the environment for realizing diverse working styles in the “new normal” based on the demands of society and the guidelines of the government. We reviewed the way organizations and individuals should be and aimed to shift to a new work style that maximizes productivity and performance while observing infection control measures. Amongst all, we introduced remote work extensively and adopted flexible time without core time in order to realize the work style not bound by place or time. In addition, we not only improved IT environment for working from home to accommodate employees to work online such as attending/hosting online meetings, but supported

managers to enhance their online management capabilities by introducing a regular check-in system to improve management of subordinates, providing support to managers for remote team management and communication, and setting up a remote counter for health consultations, etc.

Also, safety, respecting human rights, taking personal ownership for actions and communicating with openness and involvement are particularly emphasized as they are considered to embody “integrity” articulated in our Core Values, and defined as behaviors expected of all employees in the Code of Ethics. During 2020 our approach to Employee Engagement changed significantly, due to the global pandemic. Since many team members were either working reduced hours, furloughed or working remotely, it was not feasible for the management team to visit plants and worksites and listen to the voices of employees directly. Our Leaders and Managers, however, placed the safety of our team members front and center of all activities during this difficult time capitalizing on technology to enable conversations, meetings and wellbeing ‘check in’ points.

NSG Group’s Code of Ethics sets forth carrying out our business activities in a safe, professional, legal and ethical manner, and in a way that demonstrates corporate social responsibility and sustainability as its overriding basis and at the same time, acknowledges internationally proclaimed human rights explicitly. These are also reflected in our overall employment policies and standards, providing our employees with reassurance for their fair treatment. Our

Equal Opportunities and Diversity policy prohibits discrimination based on race, color, creed, religion, beliefs, age, gender, sexual orientation, national origin, disability, union membership, political affiliation, or any other status protected by law.

Among the initiatives to improve employees’ “well-being”, Group particularly has been focused on promotion of Inclusion & Diversity globally in recent years. In the meantime, there is a unique initiative of “Health Management” implemented exclusively in Japan. Although health is a universal issue, personal information about health must be handled with particular attention to privacy, which necessitates different ways of handling the matter not only culturally but legally between countries and regions. Thus, HR related actions concerning health are limited to Japan so far. Inclusion & Diversity and Health Management activities are explained in detail later.

Human Resources

1. Alignment of People Strategy with Management Strategy

Create Corporate Culture

The third pillar is Create Corporate Culture, which is aligned with Aspiration that articulates the desired future position of the Company. In order for each and every employee to be able to pursue the aspiration “to become the most trusted partner in all industries we work in through innovation”, we aim to foster the corporate culture conducive to creative thinking and innovation, and that cherishes personal value such as customer focus by helping managers develop competency for coaching and feedback to their subordinates.

NSG Group defines 'corporate culture' as the culmination of the tendencies of each employee's thinking and behaviors, and believes that a robust corporate culture can be fostered by encouraging changes in thinking and behaviors through 'dialogue' between superiors and subordinates as well as among colleagues. Particularly after the formulation of the Medium Term Vision and the Medium Term Management Plan RP24, an emphasis has been placed on the dialogue on the direction the Company should take, and even during the pandemic, we have continued to hold dialogue sessions with our employees across the Group by leveraging Microsoft Teams and other online technology. This includes a number of NSG Summits to improve communication with our global leaders, and Town Hall meetings for middle managers around the world.

Improve HR Department's Capability

The last pillar of the Popular Strategy is Improve HR Department's Capability. It is the HR department that implements HR measures aimed at maximizing the corporate value creation according to the management principles of Core Values, Mission, and Aspiration at the Group level. We believe that we can better ensure the achievement of this goal by improving the capability of HR Department.

In order to improve the capability of HR Department, we hold online meetings twice a month with all HR managers from the Head Office and Regions, which provide us with the opportunity to learn from each other's best practices and to roll out new, effective measures globally. In addition, every two years, though currently interrupted by the pandemic, we convene potential future HR executives from around the world to provide them the training to learn about the NSG Group's human resources management while building up a global human network.

To support the previously mentioned Talent Management, a talent management system called SABA has been introduced worldwide, where data on managers at all levels is accumulated in the cloud to increase the effectiveness and efficiency in talent development.



Human Resources

1. Alignment of People Strategy with Management Strategy

2. People Strategy to realize Medium Term Vision and MTP

In May 2021, NSG Group publicly announced its "Medium Term Vision" and "Revival Plan 24 (RP24)" as its new Medium Term Management Plan. In RP24, we decided to work on the following as "Corporate Culture Reform":

- **Development and appointment of those who can lead reform (to expedite Inclusion & Diversity)**
- **Recognition of delivering on the reform through incentive schemes**
- **Encouragement of open communication between management and frontline/region/ business units**

In order to develop a People Strategy that will contribute to the fulfilment of this Medium Term Vision and RP24, we conducted an employee survey 'Your Voice' targeting all NSG Group employees with the aim of grasping the current state of human resources, organization, and corporate culture. Then, an "As is—To be" gap analysis (see below for details) was performed comparing the results of our survey with the results of similar surveys made by global manufacturing companies of the same size as the NSG Group (benchmark). The analysis used the proportion of employees who held a positive assessment of the Group's situation as an indicator and compared it to the benchmark. From this, we decided to take the focused measures mentioned below where the NSG Group's indicator was low. The effectiveness and efficiency of human capital investments in these measures will be monitored in the second round of Your Voice survey scheduled in 2023.

Talent Management

Our goal toward 2024 is to embed the knowledge and application of Talent Management practices in the workplace and to develop leaders at all management levels, who have the ability to realize the Medium Term Plan – RP24. Our Human Capital investment includes; Leadership assessment, selection, and training by emphasizing specific areas of the NSG Competency Model, which align with the RP24 Corporate Culture reform - "Customer focus", "Swift decision making and action", and "Overcoming difficulties". At the same time, we will also provide employees with reskilling and training in areas such as digitalization, marketing,

and new business development necessary for the reform. Through ongoing training, we are providing continuous learning opportunities at all levels even in the environment of "With Corona", and promoting the transition of our Group programs from face to face learning events to an appropriate mix of 'Blended Learning', which includes virtual class rooms, action learning sets and face to face development activities. In terms of hierarchical talent development, our particular focus will be on accelerating Regional Talent pool, the population below Global Talent. By holding regular Global Talent Meetings, we aim to strengthen the identification and development of talent who will evolve into Global leaders in the future. Especially in Japan, where our headquarters is located, the number of candidates for global management positions registered in Succession Plans is currently declining. To address this issue, AP (Acceleration Pool) meetings will be launched in Japan in 2022 with a view to accelerating the identification and development of younger talent in their 20s and 30s who will be ready to assume Regional or Global management roles beyond national borders in the next 10-15 years. We will also create individual development plans (IDP) for the target group and implement measures such as cross-department transfers, special trainings, and assignments to project teams.

Human Resource Investment for RP24 Achievement

Hierarchical Development of Change- Leaders		Talent Development Goals (Competency)
Nomination Committee <ul style="list-style-type: none"> • Succession Plan • Assessment 	Global Leader <ul style="list-style-type: none"> • Achieve a safe, ethical and sustainable organization • Create an organizational culture that respects and encourages entrepreneurial ideas and spirit. • Break through the current situation and show a strong commitment and accountability for the results. • Create new business with new and existing customers. • Share a future vision that inspires others. 	
Global Talent Meeting <ul style="list-style-type: none"> • Succession Plan • Assessment • Talent Development Plan • Coaching-style Training for nominated • Stretch Assignment 	Regional Leader <ul style="list-style-type: none"> • Work with customers to achieve mutual success. • Make decisions in complex and uncertain situations. • Show strong commitment to results and be accountable. • Develop people in line with the competencies required by the company. • Increase the efficiency of the organization and drive swift actions. 	
Region Talent Meeting <ul style="list-style-type: none"> • Succession Plan • Assessment • Talent Development Plan • Action-Learning-style Training for nominated • Job rotation 	Country Leader <ul style="list-style-type: none"> • Always make decisions and act based on the customer's perspective. • Develop a strategy that considers profitable growth, customer satisfaction, ethics, and feasibility. • Foster a culture in which each person feels valued and respected. • Provide clear, open and easy to understand communication. 	
Managers <ul style="list-style-type: none"> • Assessment • Talent Development Plan • Onsite/Online Training for nominated • OJT and Feedback • Digitalization, Re-skilling focused on Customer Orientation 	Local Leader <ul style="list-style-type: none"> • Always be willing to respond thoroughly and in a timely way to difficult situations. • Encourage change to ensure organization effectiveness. • Listen carefully and understand the opinions of others. • Plan and execute business solutions that enhances customer satisfaction. • Delegate effectively to appropriate people to provide a sense of ownership 	

Human Resources

1. Alignment of People Strategy with Management Strategy

Employee Engagement

In 2018, NSG Group switched its performance appraisal system from a five-point relative rating scale to a four-point absolute rating scale. The current "Impact and Value Model" will be reviewed ahead of its fifth anniversary in 2023. Given the changes in the business environment since 2018, we will consider making changes and improvements to the system, to ensure fair performance evaluation and increase employee engagement in the reform.

We will also discuss career tracks and incentive schemes for professionals who despite their skills and experience indispensable to the Group are currently delayed in their promotion or pay raise because they are not on the management track, with a view to rewarding them in a fair manner for their contributions and increasing their retention.

Create Corporate Culture

As part of the "NSG Listening Strategy" launched in 2022, we introduced a new employee survey "Your Voice". The survey results were circulated to Global SBU/Function Leaders who then shared and discussed the results with their team members in all 28 countries during the "Let's Focus" session.

Global Leaders have access to the results of their team, country, region, and the Group. Following the "Let's Focus" session with Global Leaders, team members organized "Let's Talk" sessions with their own team to discuss necessary actions. We are encouraging employees to change mindset and behaviors through the dialogues in "Let's Talk" sessions hosted by each department and workplace. In addition, ideas and suggestions for the reform presented by team members have led to improvements in the working environment. We believe that through these activities, we can boost employees' self-esteem and self-efficacy for culture reform and improve our work environment.

In preparation for the "Let's Talk" session, HR provided training materials for managers to effectively facilitate the meeting. Supervisors were trained to have dialogues with employees through their daily work and to give constructive feedback. We tried to embed the practice

of giving feedback into our corporate culture to urge each employee to adopt behaviors to realize RP24.

In October 2022, all members of the Group's senior management gathered face to face to decide on specific actions they would commit to demonstrate in order to promote cultural reform. We plan to hear from employees in the next "Your Voice" in 2023 to see if management is taking the initiative in adopting behaviors to deliver culture change.

Lastly, I&D activities are essential to NSG Group's corporate culture reform and therefore, we will provide full support for such activities implemented in each region, some of which are described below.

Improve HR Department's Capability

In order to realize a people strategy that advances "human capital management," it is essential to collect "non-financial information" related to human capital and make timely management decisions based on such information. As NSG Group has expanded its business through acquisitions and integrations over the years, our human capital data is in principle, managed by each site or country, with the exception of SABA, a talent management system for managers and above. Collecting such separately managed data around the globe requires a high level of data governance to ensure alignment between data content and management purposes, consistency of data definition, legality of data provision across countries, and security of data storage.

Therefore, our goal for 2024 is to establish "HR Data Governance" and roll it out globally, as a first step towards the implementation of an integrated human capital management system.

Human Resources

2. Efforts to Quantify As-is and To-be Gap

In RP24, we explained the following actions to be taken to realize Corporate Culture Reform: “development and appointment of those who can lead reform (Inclusion & Diversity)”, “recognition of delivering on the reform through incentive schemes”, and “encouragement of open communication b/w management and frontline/region/business units”. We decided to approach these actions in three steps: 1) identify and quantify people/organizational issues to make indicators; 2) develop and implement HR initiatives for the reform and improvement; and 3) monitor changes in the indicators on a regular basis to check the effectiveness and efficiency of human capital investment.

In order to identify and quantify issues, we conducted an employee survey with questions about leadership, engagement/motivation, reward, customers, culture and behaviors, and NSG values in 2022. The “Your Voice” survey targeted all 27,845 employees in 28 countries, including those working at manufacturing sites, by ensuring easy access to the questionnaire not only from company PCs but also from personal smartphones using a QR code. 66% of employees (18,292 employees) responded to the survey carried out in January.

When the survey results were benchmarked against the industry median for similar sized global manufacturing companies in the database of HR consulting firm Willis Towers Watson, it was found that we have a lower percentage of employees with a positive perception of the company in the following three areas related to human capital.

The first area is “Engagement/Motivation”. With respect to the current status, 73% of our employees gave positive feedback vs. the benchmark of 84%. Further analysis showed that “employees feel proud to be a member of NSG Group and determined to face current challenges; however, they cannot be optimistic about the company’s future, which is leading to lower engagement”.

The second area is “Reward”. Benchmark of positive responses was relatively low at 59% vs. NSG even lower at 48%, indicating that less than half of our employees have a positive opinion of the current reward. Further analysis showed that “while employees understand that the company is working to improve compensations, they are concerned about having fewer opportunities for promotion and personal development”.

The third area is “Culture and Behavior”. 67% of NSG employees gave positive ratings vs. be

enchmark of 79%. Further analysis showed that “one third of respondents are not satisfied with the current company culture and the way leaders behave”.

We will collect continuous employee feedback through such surveys to achieve Corporate Reform set forth in RP24. In the second “Your Voice” in 2023, we will use the percentages of positive feedback received in the three areas described above in 2022 survey as indicators and monitor the effectiveness and efficiency of human capital investments made in key initiatives explained in the previous section according to the changes in the indicators.

Category	Total Favorable Score	Manufacturing Norm
Leadership	76	76
Engagement / Motivation	73	84
Reward	48	59
Customer	76	67
Culture and Behaviour	67	79
Values	84	77

Human Resources

3. Promoting Inclusion and Diversity (I&D)

Global Inclusion and Diversity (I&D) is a key issue for many companies, being widely recognized as enhancing both corporate value and the working lives of employees. NSG Group is firmly committed to further improve its own I&D, embracing the internally and externally declared Statement of Intent and one of our Core Values, "Respect Others and Unleash their Potential".

Statement of Intent

Having an Inclusive Culture and Environment:

We give everyone an equal opportunity to contribute to their full potential and harness the richness of ideas.

Having a Diverse Workforce:

Any differences in individuals' backgrounds, experiences, preferences and beliefs are recognized, respected and valued for their variety of perspectives.

1) Our effort

The NSG Group established a Global I&D Steering Committee with the aim of enhancing inclusion and diversity across the entire group. The Committee comprises 20 members, covering all business units, functions, and regions. It works with individual businesses to identify and implement local, regional, and global initiatives, identifying areas for improvement and measuring progress. One central focus is to move I&D beyond the Human Resources department and establish it within all thinking.

2) Taking action

In line with the annual Group and Regional I&D Action Plans, each country or site is implementing their own actions. One of the annual implementations at site level is to celebrate International Women's Day through various local events.

Another strategic implementation at Group level is the provision of Unconscious Bias Training to all managers across the Group. Unconscious bias occurs as our brains filter information, categorizing people and situations, in order to make quick decisions. Everyone has unconscious bias that is a result of their own cultural environment and accumulated life experiences. Unconscious bias is far more prevalent than conscious prejudice and is often incompatible with our conscious values. All managers across the NSG Group undertake online training to learn what unconscious bias is, how to recognize it in themselves and in others, and how to mitigate the potential impacts.

Examples of diversity days which were celebrated and recognized were days such as International Women's Day and International Day of People with Disabilities. Inclusion and Diversity objectives have also been set for our Senior Leaders and various countries have also set up their own Inclusion and Diversity country committees.

Human Resources

3. Promoting Inclusion and Diversity (I&D)

3) Promotion of Female Career Advancement

NSG Group supports our female career development through Inclusion and Diversity programs. We were certified as Platinum Kurumin Certification by Japanese Ministry of Health, Labor and Welfare in 2019 as we achieved high standards of the targets for our employees to satisfy both their career and childcare.



Examples of improvements include: greater visibility for females in succession planning discussions, identifying and confirming the positions to which female managers can be positioned, and encouraging more paternity leave. Online workshops have been regularly held for female managers to improve their networking and career planning opportunities, which in turn have helped with career motivation for participants.

We also introduced an exchange program with Sumitomo Group female members. During an online career seminar in 2021, attended by several companies in the Sumitomo Group, participants explored opportunities to discuss their own leadership style and consider future career options. Their experiences were shared within the Company and contributed to our female career advancement.

The group is promoting the appointment of female managers to achieve our Medium Term Plan – RP24 goal “Corporate Culture Reform”.

Female managers in NSG Group

14.2% as of 2022 June 30



FY24 target:

female manager increase at least 1% in each SBU and Function

4) Promotion of Foreign and Mid-career Employees

We operate as an integrated international Group, with a multinational management team. We believe that our diverse workforce with its range of nationalities, skills, qualifications and experience is a substantial benefit to our business. Our management style is to put the best person in each job, regardless of nationality or region. Our overseas subsidiaries are managed by local Leadership teams.

Foreign Senior Managers in the Group

2021 March 31

82.5%

2022 March 31

78.2%

NSG Group has diverse workforce with its range of skills, qualifications, and experience in the world. We are promoting the mid-career employment in Japan to satisfy the skills and careers required by our businesses and functions.

New Employment in Nippon Sheet Glass

	FY21	FY22
New graduates	26	11
Mid-careers	8	26

Human Resources

4. Wellbeing

1) Health Management

The NSG Group think “People are our most important asset”, and health promotion is indispensable for employees to maximize their individual abilities, and it leads to the sustainable improvement of the company's value. In January 2020, we made a “Health Management Declaration” in Japan.

Health Management Declaration

In order to improve the sustainable value of the Group and contribute to society, we believe that the health of employees and their families is the foundation.

Since its establishment in 1918, Sumitomo's philosophy of “People are our most important asset” has been valued, and “Respect others and unleash their potential” has been set as the first core value in the current corporate principles “Our Vision”.

Based on the idea, the Group is working on promoting the health of each and every employee and advancing the health management so that employees can maximize their abilities.

We have been working on health education and seminars to improve health literacy (awareness of health) and promote health of employees and their families, periodic health check-ups, specific health guidance, stress check and work styles reforms including curbing long working hours, promoting paid leave, childcare / long-term care support and flexible working style. We have been recognized as Certified Health and Productivity Management Organization since 2019. The NSG Group is working to improve the environment for realizing diverse working styles in the “new normal” based on the demands of society and the guidelines of the government. We are reviewing the way organizations and individuals should be and aim to shift to a new work style that maximizes productivity and performance under infection control measures.

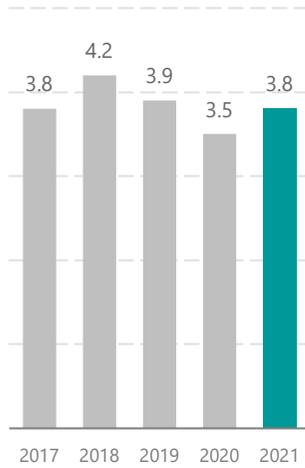
2) Stress Check Program

Stress Check Program has been conducted in Japan since 2016. While the Group results are available, we provide feedback to each organization since employees' stress levels actually vary by organization and job description, in order to improve employees' stress at work. This program also measures employees' satisfaction (engagement) with their jobs and the company, in terms of their wellbeing (physical, mental, and social wellbeing). We will reflect on these results to make the company more attractive and rewarding to work for.

Non-Financial Highlight

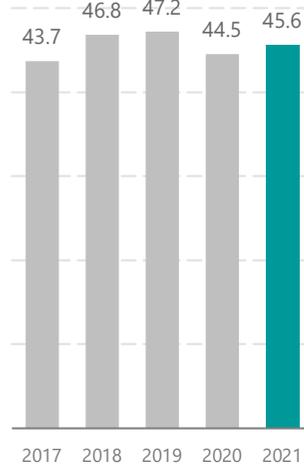
CO₂ emissions *1

(Mt)



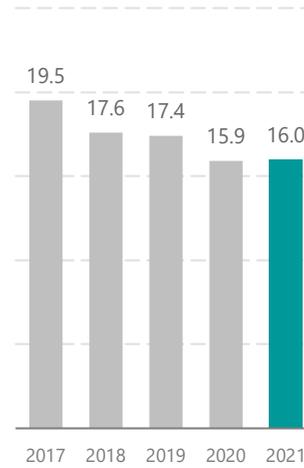
Energy Usage

(PJ)



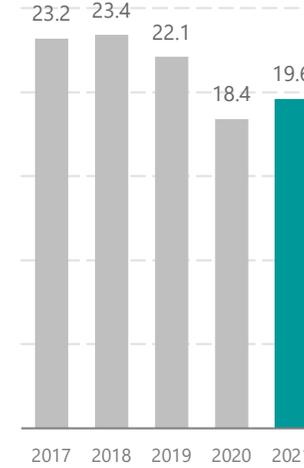
Water Usage

(Mm³)



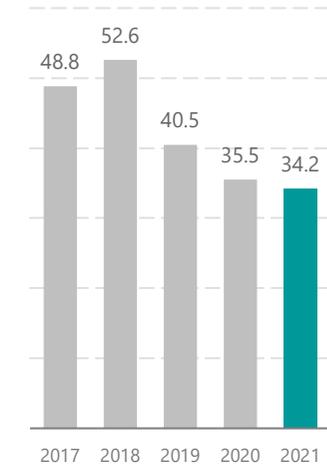
Operational waste to landfill *2

(Kt)

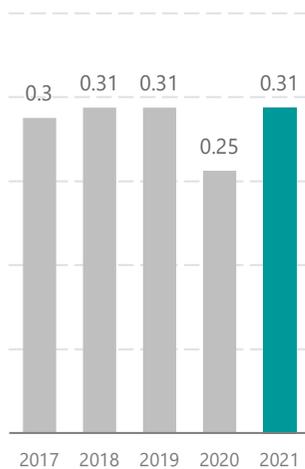


Recycling (not glass)

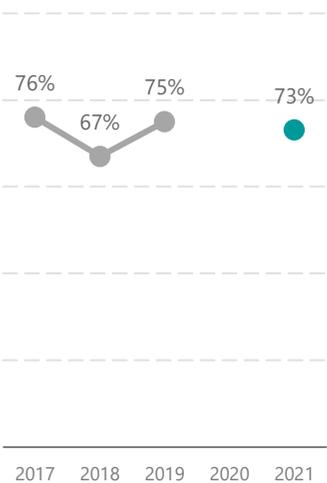
(Kt)



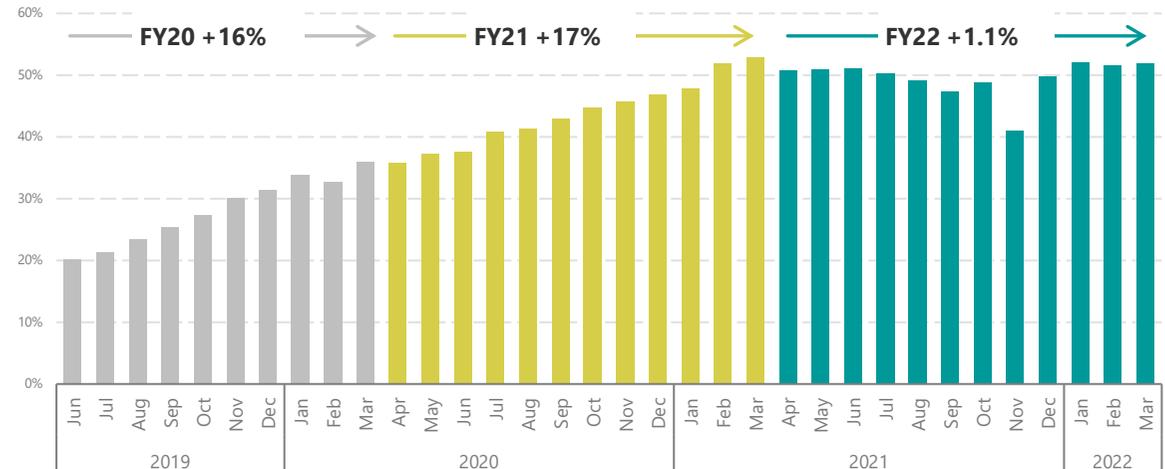
Significant injury rate (SIR)



Employee engagement *3



3 Year Performance of Supplier Spend Assessed by Eco Vadis *4



*1 Total CO₂ emissions of Scope 1 and Scope 2 Location

*2 Indicates total amount of glass and non-glass landfill waste

*3 Employee engagement in FY21 was not conducted due to the spread of COVID-19 infection.

*4 Procurement spend basis

Corporate Governance



Nippon Sheet Glass Group (the "NSG Group" and the "Group") believes that achieving and maintaining an advanced level of corporate governance is a key management agenda. We have created and adopted "NSG Group Corporate Governance Guidelines", supporting and endorsing the spirits and principles of Corporate Governance Code provided by Tokyo Stock Exchanges.

These Guidelines are intended to define and embed the basic principles and framework of our corporate governance in the organization. To further secure such purposes the Group has also adopted a self-disciplinary approach for the Guidelines which, among others, requires it to give a reasonable account to our shareholders if the Group should proceed with any actions deviating from these Guidelines.

NSG Group Corporate Governance Guidelines Fundamental Principles

The Group considers achievement of an advanced level of corporate governance a key management objective and will implement the following.

(1) Organizational structure

The Group's ultimate parent company, Nippon Sheet Glass Company, Limited will adopt a Company with Three-Committee structure and the Company hence will establish and maintain the Board of Directors (the "Board"), the Nomination Committee, the Audit Committee, the Compensation Committee (individually referred to as the "Committee") and office of Executive Officers.

The Board will authorize the Executive Officers to make decisions on the execution of businesses for the Company within the scope as permitted by law, thereby facilitating separation between business execution and oversight, enhancing the transparency of the management processes and strengthening the Board supervisory function over the executive management.

The Company will establish and maintain an internal control system operating on a Group-wide basis including in relation to financial reporting (J-SOX).

(2) Stakeholders Communication

The Group aims to be judged by as best in class by our many stakeholder groups in a variety of settings across the whole group (including shareholders, customers, suppliers and local communities) from their own perspectives and also will develop, maintain and enhance good relationship with any of such groups.

In relation to the matter of disclosure of corporate information whether or not it is to be made according to legal requirements, the Group always aims to act in a timely and appropriate manner both in terms of the substance and form, with a view to maintaining and invariably enhancing transparency of management of the Group.

(3) Code of Conduct

The Group will, in order to materialize those values, create the NSG Group Code of Ethics which all entities and employees etc. of the Group must comply with and will be regularly reviewed in light of the status of implementation/embedding within the Group and the contents.

Corporate Governance

Corporate Governance Structure

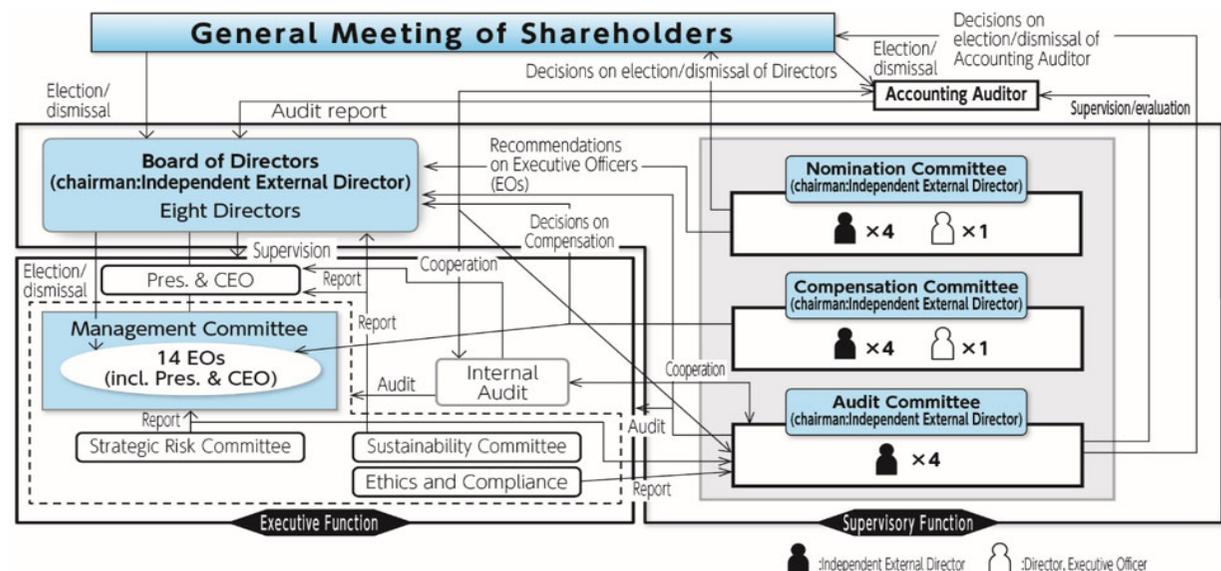
NSG Group adopts “Company with Three Committees” governance structure, and has in place, as statutory corporate organizations, Board of Directors and —Nomination Audit and Compensation Committees, and an office of Executive Officer. Currently, the Chairperson of the Board as well as chairpersons of all three Committee are all appointed from among the Independent External Directors.

Various steps have been taken to date so that NSG Group has enhanced management transparency by further separation of functions between business execution and its supervision and strengthened role of independent external directors. For example, according to the NSG Group Corporate Governance Guidelines, the roles of Chairperson of the Board and CEO are clearly distinguished. In the event that Chairperson of the Board is not an Independent External Director, an Independent External Director among them who is entrusted to perform specified tasks such as making of contribution to communication, coordination and cooperation between the Independent External Directors and the Executive Divisions and rendering of support to the Chairperson of the Board in relation to any issues of corporate governance. Independent External Directors meet on an as-needed basis, even without presence of executives, for discussion concerning matters such as corporate governance and businesses. In addition, the Board appoints the Company Secretary, the Company Secretary is responsible for promoting initiatives for efficient functioning of the Board and each Board Committee.

As regards executive function, the Group also has Management Committee, Sustainability Committee, and Strategic Risk Committee. Currently, fourteen (14) Executive Officers are responsible for the business execution. Two (2) of them are Representative Executive Officer performing the duties of CEO and COO.

Overview of Corporate Governance Structure (As of 30 June 2022)

Key items	Description	
Type of Governance structure	Company with Three Committees	
Number of Directors / term of office	8 / 1 year	
Number of Independent External Directors	4	
Chair of the Board	Mr. Hiroshi Ishino (Independent External Director)	
Chair of Three Committees	Nomination: Mr. Hiroshi Ishino (Independent External Director) Audit: Mr. Kunihiro Minakawa (Independent External Director) Compensation: Dr. Jörg Raupach Sumiya (Independent External Director)	
Number of Executive Officers (Representative Executive Officers) / term of office	14(2) / 1 year	
Compensation system	Executive Officer (including those who concurrently serve as Directors) External Director	(1) Fixed salary(Basic salary) (2) Performance-linked compensation i Management Incentive Plan (annual bonus) ii Long- term Incentive plan (3)Stock Compensation The level of compensation set at the appropriate level based on comparisons with other companies using benchmark data provided by specialist external advisers(Fixed salary)
Accounting Auditor	Ernst & Young ShinNihon LLC	



Corporate Governance

Director Skills Matrix

In order to develop and enhance the enterprise value of the Group in a sustainable manner on a medium to long term basis, the Board is required to effectively supervise the execution of duties by executive officers, etc., while preparing for a corporate environment which would enable the executive management to take proper degree of risks associated with business. Based on the company situation and the issues to be solved in the execution of the three-year medium-term plan from the fiscal year ending March 2022 to the fiscal year ending March 2024, the areas of experiences and specialized knowledge, which the Nomination Committee considers to be particularly important for the directors, are defined as follows, and the composition of directors would be well-balanced as a whole in consideration of diversity.

Global Company Management Experience

The area of experience and/or expertise required from the perspective of supervising the management of the Group which is operating globally based on the management experiences in a global or multinational business environment.

Financial Expertise

The area of experience and/or expertise required from the perspective of supervising the execution of the key initiative, "Restoration of financial stability" in the medium-term management plan.

Risk Management

The area of experience and/or expertise required from the perspective of effective and efficient supervision in identifying and evaluating critical risks that the Group should manage.

ESG / Sustainability

The area of experience and/or expertise required from the perspective of effective and efficient supervision for the initiatives to attain sustainable growth of the Group and contribute to a sustainable society in the medium-to long-term such as climate change issues and initiatives to ensure a highly independent and transparent Corporate Governance system for that purpose.

Portfolio management / New Business Development

The area of experience and/or expertise required from the perspective of effective and efficient supervision for the initiatives against "Business structure reform" such as new business development and Portfolio transformation to highly profitable business.

Operational Excellence / Supply Chain Management

As a manufacturing company, improving on-site operational work performance is essential, and from procurement / manufacturing to logistics, cost structure reform that transcends the boundaries of each function and optimal manufacturing / supply chain are important. Therefore, this area of experience and/or expertise should be required from the perspective of effective and efficient supervision for the initiatives against "Cost structure reform" "Business structure reform" and "Restoration of financial foundation".

Marketing/Commercial

Strategic marketing is needed to develop the business, and this area of experience and/or expertise should be required from the perspective of effective and efficient supervision in implementing the initiatives for "Business structure reform" and customer-oriented "Corporate culture reform".

	Global Company Management Experience	Financial Expertise	Risk Management	ESG / Sustainability	Portfolio management / New Business Development	Operational Excellence / Supply Chain Management	Marketing / Commercial
J.Raupach-Sumiya	●			●	●		
H.Ishino	●					●	●
K.Minakawa	●	●	●				
Y.Kuroi	●		●	●			
S.Asatsuma	●	●	●				
S.Mori	●		●		●		
M.Hosonuma					●	●	●
T. Fradgley		●				●	●

Notes: Up to three most highly expected areas of experiences and specialized knowledge are indicated for each Director. The table does not represent all the specialized knowledge and the experiences possessed by each Director.

Corporate Governance

Board Effectiveness Evaluation

The Company started an annual evaluation process for the Board effectiveness since FY2016, in order to further and constantly improve performance and effectiveness of the Board of Directors and Nomination, Audit and Compensation Committees. The overall summary of the results from the review made in relation to FY ended March 2022 is as follows.

Our Effectiveness Review Process

The Board confirmed the progress of the priority implementation items effective from prior years for improvement made during the year ended March 2022. In addition, as part of the annual evaluation process for the above financial year, the Board conducted an analysis and evaluation of the effectiveness review of the Board and Committees based on the feedback and views taken from each Director in terms of composition, status of meeting management, agenda setting, status of deliberations, performance of the role of the Board, communication with the Executive team and material agendas requiring further in depth deliberation by the Board on a going forward basis. The entire process was led and supervised by the Independent External Directors under the leadership of the Chairperson of the Board to ensure sufficient adequacy and independence.

Priority Implementation Items (what to do next)

By reference to and on the basis of the evaluation results and views, the Board adopted the following priority implementation items through the exchange of views at sessions consisting exclusively of Independent External Directors and discussions at the Board meetings, with a view to ensuring the execution of the Revival Plan (RP24) and improving the Group's corporate value over a medium to long term in a sustainable manner through the Board and the Committees.

- In addition to in-depth discussions of the medium- to long-term management strategy and important management issues, regarding key measures set forth in MTP (RP24), request the Executive Team to further specify implementation items to achieve the plan and monitor the progress to ensure their swift implementation in view of the ongoing changes in the business environment.
- Pursue the significance of diversity in the Board, work on realizing an appointment of a female Director, which is an ongoing issue.
- In order to properly deal with medium- to long-term important management issues, promote in-depth discussions on the skills and experiences required for the Board and the current composition of the Board, and select Director candidates.

Evaluation Summary

The effectiveness review endorsed that the Board and the Committees were all properly and soundly operated to ensure their effectiveness during the fiscal year under review. At the same time, the following points were confirmed as issues to be addressed by the Board individually.

1. NSG Group's Medium Term Management Plan (MTP)

To deepen discussions on the medium- to long-term management strategy and important management issues with a view to enhancing the corporate value of the Group in a sustainable way. In addition, the Executives' initiatives to address the challenges incorporated in MTP (RP24) need to be specified further and their implementation needs to be accelerated in response to various changes occurring in the external environment.

2. The Composition of Directors

In order to properly deal with medium- to long-term important management issues, promote in-depth discussions on the skills and experiences required for the Board and enhance the effectiveness of the process of selecting Director candidates. At the same time, promote the appointment of a female Director who is currently absent.

Criteria of Independency for External Director at NSG

An External Director is a director who has never been a director, executive officer nor employee of the company nor its subsidiary. To enhance the transparency of business management, the Company has appointed five External Directors out of the eight Directors, four of whom are designated as Independent Directors under the TSE.

In addition to the criteria for independency defined by the TSE, the Company has established its own criteria of independency for External Directors, taking into consideration their relationship with the Group including such with its officers and major shareholders. All of the four External Directors satisfy the criteria of independency, its officers, major shareholders, etc. These all four External Directors meet the relevant criteria of independency. Please refer to [the Group's Criteria of independency for External Directors](#)

Corporate Governance Report

The Group has filed the Corporate Governance Report in accordance with the TSE Corporate Governance Code revised in June 2018.

Please refer [the Group's Corporate Governance Report \(as of 14 October 2022\)](#)

For more detail please see NSG website

[Approach \(nsg.com\)](#)

Board of Directors (As of 29 June 2022)



Hiroshi Ishino

Independent External Director
Chairperson of the Board
Chairperson of Nomination Committee



Jörg Raupach Sumiya

Independent External Director
Chairperson of Compensation Committee



Kunihito Minakawa

Independent External Director
Chairperson of Audit Committee



Yoshihiro Kuroi

External Director



Shinji Asatsuma

Independent External Director



Shigeki Mori

Director
Representative Executive Officer
President and Chief Executive Officer (CEO)



Munehiro Hosonuma

Director
Representative Executive Officer
Vice President and Chief Operation Officer (COO)



Tony Fradgley

Director
Senior Executive Officer
Chief Transformation Officer (CTrO)

Nomination Committee	Audit Committee	Compensation Committee
Hiroshi Ishino (Chairperson of Nomination Committee)	Kunihito Minakawa (Chairperson of Audit Committee)	Jörg Raupach Sumiya (Chairperson of Compensation Committee)
Jörg Raupach Sumiya	Jörg Raupach Sumiya	Hiroshi Ishino
Kunihito Minakawa	Hiroshi Ishino	Kunihito Minakawa
Shinji Asatsuma	Shinji Asatsuma	Shinji Asatsuma
Shigeki Mori		Shigeki Mori

Executive Officers (As of 29 June 2022)



Representative Executive Officer

Shigeki Mori

Director
Representative Executive Officer
President and Chief Executive Officer



Representative Executive Officer

Munehiro Hosonuma

Director Representative Executive Officer,
Vice President and
Chief Operating Officer



Senior Executive Officer

Tony Fradgley

Director Chief Transformation Officer



Senior Executive Officer

Leopoldo Garces Castiella

Head of Architectural Glass



Senior Executive Officer

Koichi Hiyoshi

Chief Legal Officer, Chief Risk Officer,
Company Secretary, and
Officer in charge of Ethics and Compliance



Senior Executive Officer

Reiko Kusunose

Chief Financial Officer



Senior Executive Officer

Hisashi Okamoto

Head of Creative Technology



Senior Executive Officer

Rob Purcell

Head of Automotive OE



Senior Executive Officer

Phil Wilkinson

Head of Automotive AGR



Executive Officer

Mike Greenall

Chief Technology Officer



Executive Officer

Shiro Kobayashi

Sustainability Director



Executive Officer

Yutaka Nakashima

Chief Human Resources Officer



Executive Officer

Iain Smith

Finance Director



Executive Officer

Milena Stanisci

Head of Manufacturing Excellence and
Head of Manufacturing, Automotive OE

Policy for Directors and Executive Officers' Compensation

1. Organization & Responsibilities for determining Compensation

The company has in place the statutory Compensation Committee (the "Committee") as adopting a "Company with Committees" structure. No member of the Committee is allowed to be present when matters relating to their specific compensation are being discussed.

Role

Compensation Committee is responsible for making decisions on a compensation policy for Directors and Executive Officers as well as individual elements of compensation for Directors and Executive Officers.

The Committee may also give recommendation or advice to the Representative Executive Officer, President and CEO on the policies and details with respect to compensation for the Group's senior management other than Directors and Executive Officers.

Composition

- 4 Independent External Directors and 1 Internal Director
- Chaired by Dr. Jörg Raupach Sumiya, Independent External Director

Secretariat

Company Secretary Department

Remuneration Expert

Human Resources Department

2. Compensation Policy for Executive Officers

Compensation System and Compensation Composition Ratio

Compensation packages for the Executive Officers principally consist of basic salary, Management incentive Plan (annual bonus) and Long-term incentive plan. The Group operates a global grading structure across the Group, and management grade is determined based on job evaluation by the Group common scale using the HAY management grade methodology, a globally recognized job evaluation methodology. Management grade determines the maximum quantum levels for participants in both the annual and long-term incentive structures.

Compensation System

- Objectives**
 - To ensure that packages of employment terms and conditions are market competitive and designed in such a way as to attract, retain and motivate Executive Officers of the highest caliber on a worldwide basis in an international business.
 - To ensure that each individuals basic salary and incentives are aligned with the performance of the Group and the interests of shareholders, as well as reflecting the commitment and achievements of the individuals concerned.

Composition and Details

- Fixed salary**
 - Salaries are reviewed annually and are broadly aligned with market medians for a global business.
- Basic salary**
 - In determining what are the appropriate market rates, account is taken of turnover, market capitalization and the complexity and breadth of internationalization.
 - In reviewing salaries, account is also taken of the scope and responsibilities of the role, the performance of the individual, the progress the Company is making against its targets and plans and of salary increases planned for other managers.

Performance-related compensation

- Management Incentive Plan (annual bonus)**
 - Assessed against the achievement of annual performance indicators which are mainly financial.
 - Aligned to NSG Group's Medium-Term Plan
 - Payment Maximum levels: Ranging between 40% and 125% against each individual's basic salary dependent upon the management grade
- Long-term incentive plan**
 - Assessed against the achievement of long-term performance indicators over a three-year period
 - Issued annually
 - Payment Maximum levels: Ranging between 50% and 150% against each individual's basic salary dependent upon the management grade
 - Share price movement element: In order to align Executive Officers with shareholders, the award earned from these performance-based plans are factored up or down according to the share price movement during each three-year plan period
 - Require the purchase of NSG Shares by using part of the cash award from the plan to lead to further alignment of the Executive Officers with shareholders, allowing Executive Officers to continue to be motivated to help build shareholder value. This element is substantially equivalent to stock-based compensation (performance share)
 - Shareholding targets set for Executives (Ranging between 25% and 100% against each individual's basic salary dependent upon the management grade)
 - Plans contain Malus (ability for the value of award to be reduced after it has been granted but before it has vested) and Clawback clauses (ability for the Group to require the participants to repay the value they received after the award has vested). The Group can exercise these provisions if one of a list of trigger events occurs. Trigger events include the Misstatement of results, an error that causes an award to be paid at too high a level, a serious illegal act, or a material breach of the Group Code of Ethics.

Stock Compensation

- Restricted shares are issued annually to some Executive Officers under Japanese employment terms as a retirement saving plan.

Policy for Directors and Executive Officers' Compensation

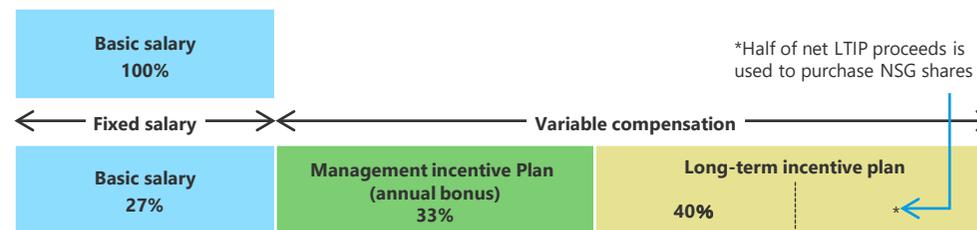
Compensation ratio

The ratio of basic salary and incentives is, rather than specifically and equally applied, set according to individuals' management grades. In order to attract, secure, and motivate superior executives, both in Japan and overseas in the global war for talent, the ratio of performance-linked compensation is also set considering the compensation ratio for the executives in global companies.

CEO's compensation ratio

In the case that all criteria of performance-linked compensation have not been reached

In the case that performance-linked compensation have been reached all maximum (maximum payment of performance-linked compensation)



Note: For clarification, the above diagram includes only base salary plus annual and Long-term incentive plan compensation, no additional benefits are included. In addition, the impact of the share price movement element of the Long-term incentive plan is not taken into account.

FY2023 Management Incentive Plan (annual bonus)

Performance measures and weight

Element	Ratio	Reasons for selected the measures
Group Management Operating Profit	50%	Ensure alignment with delivery of the target numbers assigned to Group operating profit and cash flow which are the financial performance indicators specifically important to the annual budget
Group Free Cash Flow	50%	

Determination of Management Incentive Plan (annual bonus) Payment Level

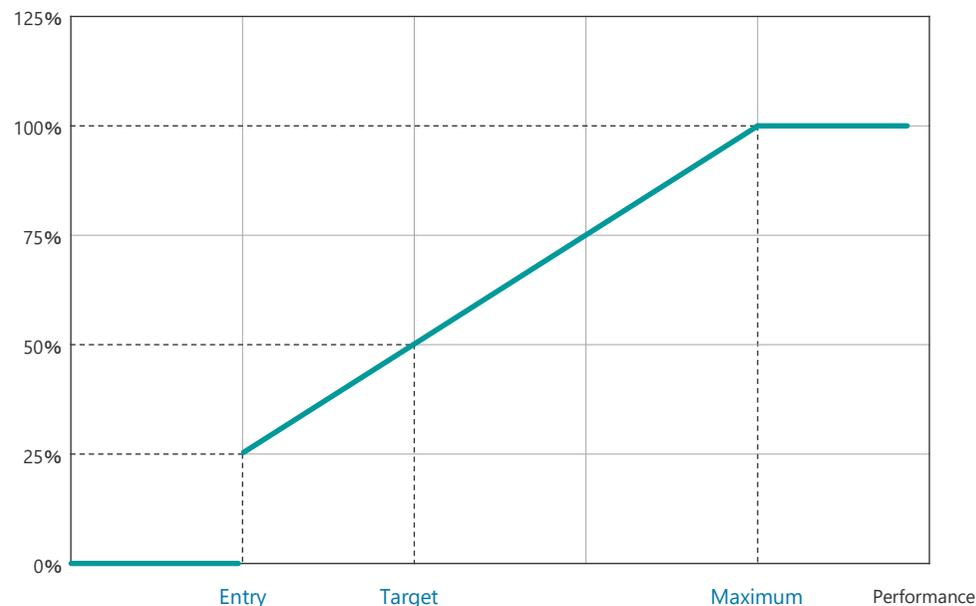
Payment Level = Maximum payment amount × Payment rate of Performance measures

A Gate mechanism operates for the plan, which is based on a minimum level of Net Income that must be reached, as an affordability threshold before considering payment based on achievement against the different performance measures.

- If the Gate is not met, no payment is made
- If the Gate is met, payment is made based on payment rate against the performance measures

For each performance measure the "Target" level of performance is set in line with the annual budget for the financial year. Appropriate stretch to the minimum performance level ("Entry") is identified, as is the stretch to the performance level that would equate to the maximum payment level ("Max").

Payment rate



payment rate of performance measures = Payment rate of Group Management Operating Profit measure x 50% + Payment rate of Group Free Cash Flow measure x 50%

Policy for Directors and Executive Officers' Compensation

Long-term incentive

Performance measures and weight of plans currently in operation

- 1. Plan commencing in FY2021*** (Target period : FY2022 and FY2023)
- 2. Plan commencing in FY2022** (Target period : FY2022, FY2023 and FY2024)

* For the plan commencing in FY2021 only, due to the uncertainty in numbers resulting from the impact of Covid-19 on the business, the aggregate EPS scale is based on the 2 years FY22 and FY23.

Performance Measures	Ratio	Reasons for selected the measures
EPS	50%	Two performance measures ensure clear link with the Medium-Term Plan, incentivizing executives to further strengthen earning power and enhance shareholder value.
ROS	50%	

Determination of LTIP Payment Level

LTIP Payment =

Maximum payment amount × Payment rate of Performance measures × Share price movement rate

For each measure, "Entry" is set in such a way to ensure that the business is meeting the minimum required performance level and the "Maximum" point on the scale has appropriate stretch.

The share price movement rate is a coefficient that is linked to the price movements of the Company's share price for the three-year period covered by each plan, and is adjusted based on the price movement of the monthly average share price in the month before the start of the plan and the monthly average share price of the last month of the plan

3. Compensation Policy for Independent External Directors

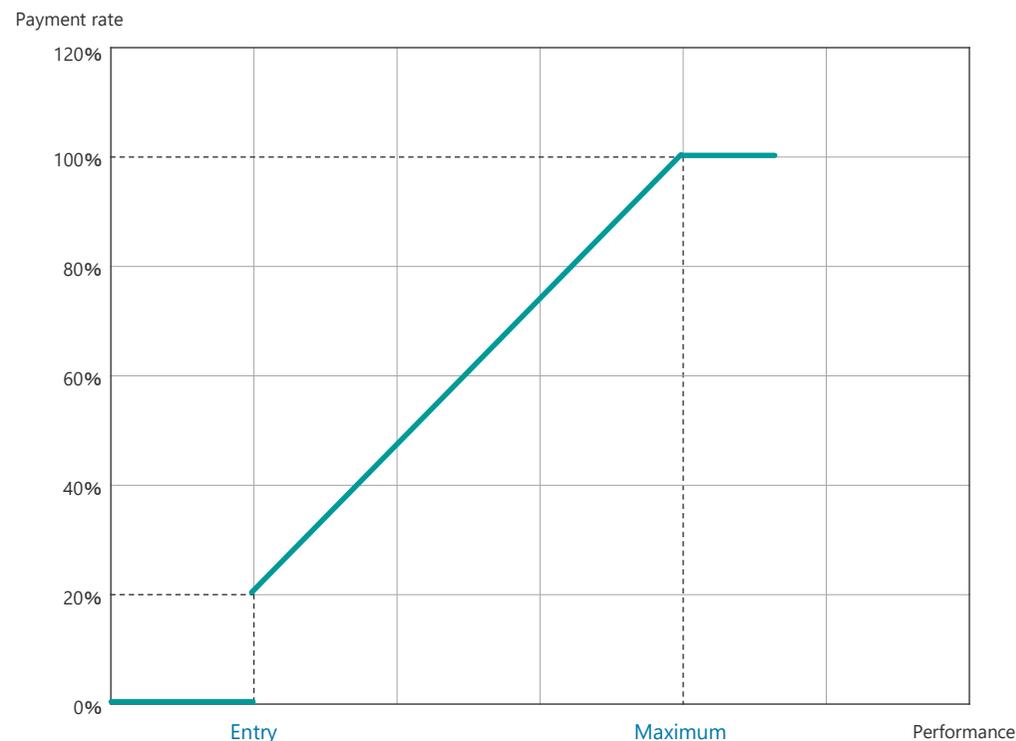
Objectives

- To ensure that independent external directors can adequately and effectively fulfill their supervisory roles
- To ensure that they have the capability and experience required to fulfill this role

Compensation level

- Set at the appropriate level based on comparisons with other companies using benchmark data provided by specialist external advisers.*

* In the case that a Non-Independent External Director is elected, compensation will be set at an adequate level for his/her duties in a way commensurate with the duties discharged by Independent External Directors including in terms of whether or not they are appointed as member of any of three Committees and so forth.



payment rate of performance measures = Payment rate of Group Management Operating Profit measure x 50% + Payment rate of Group Free Cash Flow measure x 50%

Compensation Structure

- Only Basic salary
- Not eligible for Management incentive plans (annual bonuses) and Long-term incentive plans
- Cash compensation only, no share-based compensation introduced
- Independent External Directors receive additional reward if they act as Chair at either the Board or any of the Committees.

Dialogue with External Directors

Q1

The medium-term management plan, Revival Plan 24 (RP24), started last year in FY2022. In the 2021 Board Effectiveness Evaluation, the Board of Directors stressed “Monitoring of RP24 to ensure its rapid implementation and check the progress status and facilitating in-depth discussions on overall management issues of critical importance to the Group” in its improvement plan. Would you elaborate on specific initiatives and actions by the Board of Directors?



Chairperson of the Board
Chairperson of Nomination Committee
Hiroshi Ishino

Chairperson of Audit Committee
Kunihito Minakawa

Ishino The three-year period of RP24 is defined as the “period for business transformation” and three reforms are being undertaken, namely, the cost structure reform, the business structure reform, and the corporate culture reform. The cost structure reform through cost reduction and productivity improvement was implemented by the Executive Team as planned in FY2021 and FY2022. The Board of Directors held in-depth discussions on the management issues for the Group’s business transformation and carefully monitored the progress of key measures carried out by the Executive Team. Specifically, a review of the progress report on RP24 and its key measures was made into an agenda of every Board meeting and moreover, aside from these regular meetings, extraordinary meetings were scheduled throughout the year as necessary to delve into critical issues. For example, we discussed intensively the business strategy for solar energy glass as one of the Group’s focus areas for expansion of VA business, which lead to an announcement of the plan to invest in additional production

capacity of solar glass in Malaysia in August 2022. In line with the worldwide trend for decarbonization, solar glass business is expected to grow continuously into the future, and the Board of Directors intends to promote in-depth discussions with the Executive Team for further refinement of the medium- to long-term business strategies.

Minakawa Currently, the Board of Directors is particularly focused on restructuring Automotive Glass Business. Vehicle manufacturing continues to be limited due to shortages of semiconductor and other components and the soaring prices of energy, especially natural gas in Europe, and raw materials are also affecting businesses. Improving profitability is the Group’s urgent task. In FY2022, Group implemented additional cost reduction initiatives and achieved results higher than the plan. However, the business environment remains harsh and profitability improvement is yet to be realized. In Europe, the Group’s main business region, it is necessary to undertake a fundamental cost structure reform including consolidation and elimination of production sites and distribution centers. The Board of Directors supports appropriate risk-taking by the Executive Team and will continue to have extensive discussions with them to facilitate agile implementation of measures.

Ishino Automotive Glass Business faces a tough operating environment, with costs and production volumes fluctuating significantly due to external factors, which are difficult to predict. Also, the automotive industry and its supply chain are expected to undergo drastic changes due to the rapid development of CASE*. To achieve sustainable enhancement of business value, traditional business operations and customs need to be reconsidered, but this also provides opportunities for business transformation. Already, Group started a variety of new initiatives for Automotive Glass business transformation including Digital Transformation (DX) and other efficiency

improvement measures as well as price improvement negotiation with customers, and the Board of Directors intends to have in-depth discussions with the Executive Team while monitoring the progress of those measures.

*CASE stands for Connected, Autonomous, Shared & Services, and Electric.

Minakawa The goal of the corporate culture reform, which is one of the three reforms set forth in RP24, is to transform the organization into the one that keeps taking up challenges and follows through to deliver results. Human resources and corporate organization are the foundation for promoting business transformation. The Board of Directors acknowledges development and appointment of talents who can lead reforms, acceleration of inclusion & diversity, and the communication strategy to promote the corporate culture reform as major initiatives for the corporate culture reform put forth by the Executive Team and will continue to have in-depth discussions with them from the perspective of “human capital investment” while monitoring their progress to facilitate the rapid implementation of each initiative.

Ishino FY2023 is the middle year of RP24. While the Group’s business environment has changed significantly since when RP24 was formulated due to the increased prices of energy and raw materials and so forth, the Board of Directors will continue to call for the Executive Team to refine the countermeasures to deliver the plan and execute them swiftly taking into account the changes in the business environment. Furthermore, the Board of Directors plans to promote in-depth discussions with the Executive Team on the medium- to long-term strategy and vision as well as management issues looking ahead beyond RP24.

Dialogue with External Directors

Q2

The Board of Directors of NSG Group is mainly composed of External Directors and the Chairperson is also Independent External Director. Please tell us how such composition of the Board of Directors as well as having Independent External Director as the Board chairperson are contributing to the effectiveness of the Board of Directors?

Ishino As a company with three committees, the Nomination Committee mainly composed of Independent External Directors deliberates on candidates for Directors and decides on the proposals for the appointment of Directors to be submitted to the General Meeting of Shareholders. The current Board of Directors consists of five External Directors and three Directors who concurrently serve as Executive Officers, reflecting the result of discussions in the Nomination Committee as to the appropriate balance between executive and non-executive Directors in the Board composition in a bid to prompt the Executive Team to strenuously work on reform measures and to make monitoring by the Board of Directors more effective considering the drastic changes in the Group's business environment and the continuation of this trend. Directors include people with management experiences in global companies or from academic circles, ensuring an appropriate balance of skills and diversity in terms of nationality and age.

Minakawa With regard to the composition of the Board of

Directors, a gender diversity remains to be an issue. We tried hard to find female Director candidates under the leadership of the Nomination Committee but to no avail unfortunately. We need to address this issue as a major challenge for us. In the meantime, Group developed a skills matrix of Directors in 2021 and has been disclosing it since then. In 2022, the second year of disclosure, the Nomination Committee discussed a partial change to the skillset of the NSG's Board of Directors. Specifically, the Committee reassessed the skillset required of the Board of Directors in view of the current management challenges and added "ESG/sustainability" as a new skill category to prompt and supervise the initiatives implemented by the Executive Team, given the growing significance of this issue. We need to have ongoing discussions on the skillset required of the Board of Directors.

Ishino Since 2012, the Group's Nomination, Audit and Compensation Committees have been all chaired by Independent External Directors and since 2013, the Board of

Directors has also been chaired by Independent External Director. It is effective to have Independent External Director chair the Board of Directors not only in dividing the management oversight and the business execution definitively but also in promoting constructive discussions based on diversity. In contrast, it seems that the Board of Directors chaired by Internal Director tends to take side with the Executive Team.

Minakawa I feel NSG's Board of Directors and each Committee are characterized by a culture of open and candid discussions among External Directors. Probably, this can be attributed to the history of the UK-based governance style in place since the acquisition of Pilkington in the UK.

Ishino All information held by the Executive Officers is shared without restrictions. The tradition nurtured by the robust governance system is a hallmark of NSG's Board of Directors.



Dialogue with External Directors

Q3

NSG Group operates globally and has many consolidated subsidiaries and joint ventures/associates in Japan and abroad. What is the Audit Committee's approach to global, group governance and internal control?

Minakawa The Group's Audit Committee is composed entirely of Independent External Directors. As an internal organ of the Board of Directors, the Committee is responsible for supervising the Group's internal control systems and group-wide risk management systems to ensure they are properly established and implemented. It is difficult for the Committee with a limited number of members alone to supervise the whole Group on a global scale. For this reason, we have dedicated staff in the Audit Committee Office, the Secretariat of the Audit Committee, in charge of collecting information and carrying out organizational audits in collaboration with Group Internal Audit, other functions responsible for internal control, and Accounting Auditors. The Committee also ensures the effectiveness and efficiency of the audit by combining audit activities as appropriate, such as directly interviewing Executive Officers, attending the Management Committee meetings and inspecting material documents.

Ishino Even amid the Covid-19 pandemic, the Audit Committee

has managed to conduct interviews with Executive Officers and SBU/Function Heads, as well as site visits through the use of remote technology. We are now gradually resuming on-site inspections in light of the Covid-19 situation, but I think there is room for further expanding remote audit activities, especially for overseas sites that are difficult to visit.

Minakawa The Audit Committee has confirmed that the Group is striving to enhance its internal control environment through the transformation of business processes including Digital Transformation (DX) which is currently being undertaken as part of the Group's structural change. In addition, Group Internal Audit and Accounting Auditors are also working to improve the efficiency and quality of audits by utilizing data analysis and digital technology. Meanwhile, we have more than 200 consolidated subsidiaries and joint ventures/associates, so the Audit Committee's challenge lies in how to ensure the comprehensiveness of the audit. From the perspective of group governance and internal control, we have listed each of these

consolidated subsidiaries and joint ventures/associates, checked their attributes and current status, and set up the division of roles between Group Internal Audit, Accounting Auditors, and the Audit Committee in order to ensure close communication between the three parties and the comprehensiveness of the audit.

Ishino To sum up, NSG Group has a strong organizational audit structure that is characterized by close cooperation between the Audit Committee comprising Independent External Directors, and the dedicated staff of the Committee Office; Group Internal Audit and other functions responsible for internal control; and Accounting Auditors, and that is a unique feature of the Group.

Minakawa The Audit Committee will continue to work together with the Board of Directors to set effective agenda items and audit activities with the intention of improving the accuracy of our monitoring of the Executive Team.



Dialogue with External Directors

Q4

In May 2022, NSG Group declared that it will achieve carbon neutrality by 2050 and raised its CO₂ emissions reduction target for 2030. Please tell us about the discussion at the Board of Directors regarding the reduction of the Group's CO₂ footprint.

Minakawa In November 2021, the Board of Directors formulated "NSG Group Basic Policy on Sustainability". We defined it as the Group's "Basic Management Principle" to address climate change and other sustainability issues through our business operations with a view to enhancing corporate value over the medium to long term and contributing to the realization of a sustainable society. We have also clarified the Board of Directors' ownership of sustainability issues. Under this basic policy, we are sending a clear message with our carbon neutral target and revised CO₂ reduction target.

Ishino In setting the more aggressive carbon reduction target, the Board of Directors confirmed with the Executive Team the Group's approach to delivering the target. We are making concrete efforts in the glass manufacturing process which emits a large amount of CO₂, including the world's first successful trials in glass production powered by hydrogen and biofuels. Going forward, we must accelerate other actions as well, such as increasing the introduction of renewable energy and reducing our carbon footprint through the supply chain, in addition to

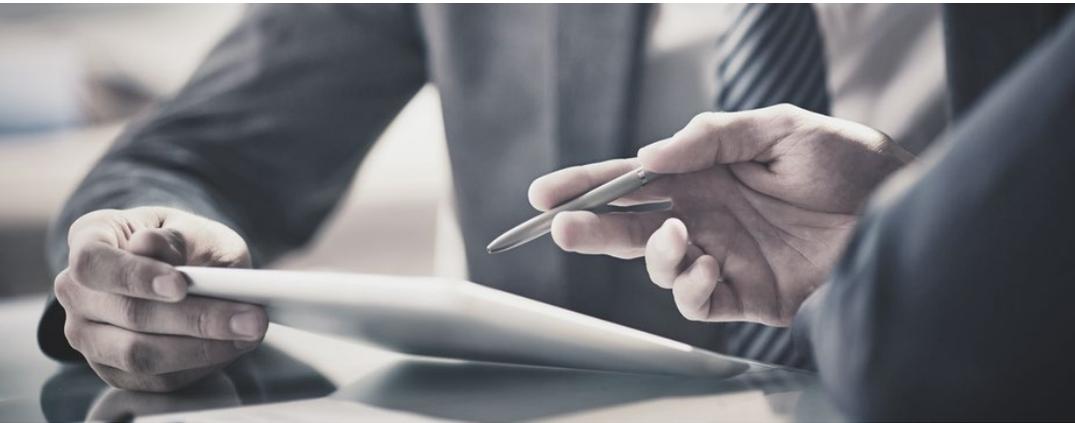
our efforts in the manufacturing process.

Minakawa Investors are keeping a close eye on how companies act on sustainability issues including climate change. In addition to clearly communicating our policies and goals, we will also need to explicitly disclose the details of our substantive initiatives to the market.

Ishino Sustainability is a material management matter to be addressed by the Board of Directors together with the Executive Team from a medium-to long-term perspective. In tackling sustainability issues, constructive discussions based on diverse viewpoints are critical. Building on a culture of open discussions among External Directors, the Board of Directors will strive to carry out more in-depth and focused discussions on management issues, including sustainability, and will support and monitor the efforts by the Executive Team.



Risks and Risk Management



Basic Policy

Consistent with the "Our Vision" management principles, NSG Group aims to enhance corporate value by sustained growth in line with the Medium-term Plan RP24. That said, the business environment enveloping the Group has become increasingly complex and is continuing to dynamically transform. We see risks in the uncertainties that stem from internal and external factors, which threaten to affect the Group's ability to achieve its business targets. We therefore position risk management, which is tasked with identifying, assessing, and properly managing major risks, as an important part of our management foundation in order to minimize the negative effects and maximize positive results. By systematically and methodically implementing appropriate risk management across the entire Group, we can not only achieve our short-term business targets, but also reliably execute business strategies.

NSG Group's risk management is carried out in accordance with our Fundamental Policy on Internal Control Systems, which was resolved by the Board of Directors in accordance with the Companies Act and Corporate Governance Code. Specific measures for addressing risks that arise in connection with our corporate activities are prescribed in our NSG Group Risk Management Policy and are consistent with ISO 31000 (principles and guidelines on risk management) as well as the COSO Enterprise Risk Management model.

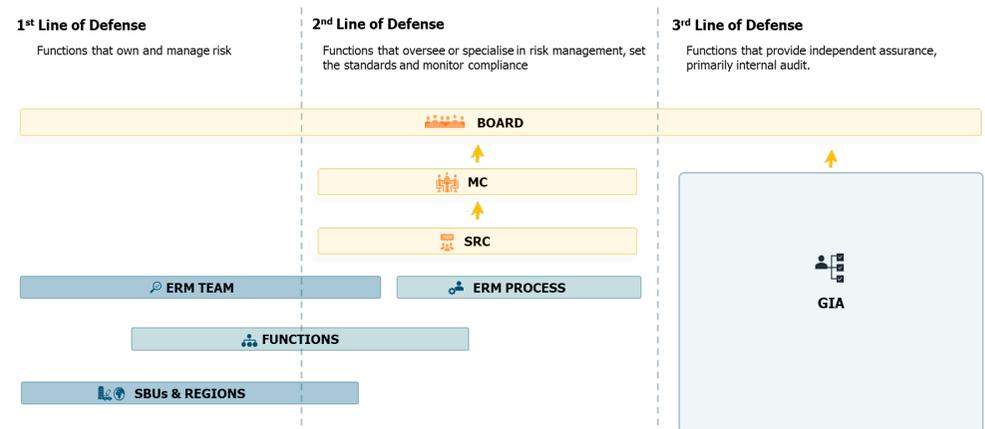
We are looking to continuously improve our systems in line with developing standards and the evolving risk landscape.

Framework

NSG's risk management systems are established so that they are fully embedded within the Group's day-to-day operations and operate as "three lines of defense". The first line of defense is established within the business SBU's and Group Functions who operate controls and mitigations to identify, assess and manage risks across all the activities of the Group as part of its the day-to-day operations. The second line of defense is made up of the Group Functions and management forums who not only set the operating and risk management policies and standards for the operations, but also monitor the effective operation of the controls. The third line of defense is provided by the Group Internal Audit Function who make an independent evaluation of the effectiveness of the controls and the risk management processes.

At the heart of its enterprise risk management system – the second line of defense – NSG Group employs a two-tiered risk management framework comprising the Strategic Risk Committee (SRC) and the Enterprise Risk Management Team (ERMT), both of which are under the supervision of the Management Committee, and report onwards to the Board of Directors.

ERM Organization – Three Lines of Defense



Risks and Risk Management

SRC Structure and Purpose – Top-down Risk Review

SRC is chaired by the Chief Risk Officer (CRO) and its members are mostly executive officers including CEO. SRC determines the companywide risk management policy and framework, based upon which it identifies and classifies: (a) high level risks thought to have a serious impact on the Group; and (b) operational risks that ought to be managed by SBUs or Group functions. It then monitors how those risks are being addressed and requests that additional measures be taken if required. For high level risks, SRC appoints "risk owners" to manage the collection of risk information and the progress of countermeasures. CRO presides over all SRC meetings and as representative of the committee, periodically reports to and receives feedback from the Management Committee and the Audit Committee regarding the effectiveness of the Group's basic internal control system and risk management structure. On an annual basis the SRC members formally review the current risk universe and the results of the ERMT Bottom-Up Risk Review as explained below, to identify if the risks being monitored by SRC need to be amended. In FY2022, SRC convened three meetings and reported once each to the Management Committee and the Audit Committee.

ERMT Structure and Purpose – Bottom-up Risk Review

ERMT is chaired by CFO and its members comprise heads and relevant senior managers of SBUs and functions such as accounting, finance, human resources and legal. Every year this team identifies, assesses, and prioritizes the key risks pertaining to business execution and endeavors to improve the effectiveness of risk management by formulating necessary measures to mitigate risks. ERMT periodically, or whenever requested, reports on its activities to SRC.

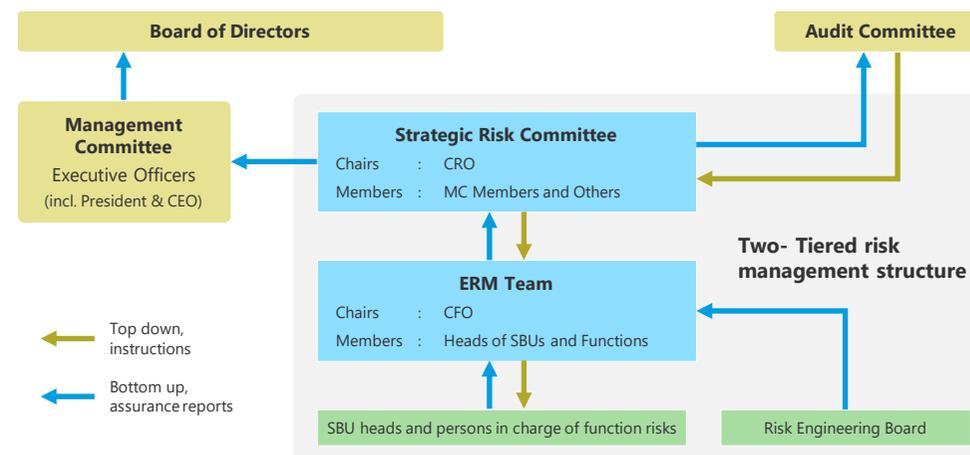
Independent Assurance

The Internal Audit Department's role is to provide assurance from an independent standpoint, regarding the companywide efficiency of risk management, and the effectiveness of specific risk mitigations.

Global Insurance Program

To transfer or share risks, we have established an NSG Group Insurance Program. The program identifies the key insurable risks, including property losses caused by natural disasters, and endeavors to transfer them by placing cost effective insurance. Every year, under the supervision of SRC, we review the Group's comprehensive insurance coverage under the global insurance program.

NSG Group Risk Management Structure



Major Risks for NSG Group

In FY2022 SRC identified, assessed and monitored the following risks. For each risk, an owner has been appointed from among the executive officers or senior managers, to take responsibility for appropriately managing it.

For each of the key risks being monitored, SRC has determined that sufficient mitigations are in place, or are being progressed, to manage the risk within the Group's appetite.

Business continuity risk	Political and fiscal risks
Supply chain non-performance	Labor/talent shortage
Cyber risk	Ascertaining and responding to technological innovation
Technology and system risks	Business strategy risk
Loss of competitiveness to key customers	Compliance risk
Economic risk	New or amended laws and regulations
Financial risk	Intellectual property risk
Product quality risk	Organizational culture transformation failure
Climate change risks	

Risks and Risk Management

Risk Focuses

Natural Gas Supply Impact on Manufacturing in Europe

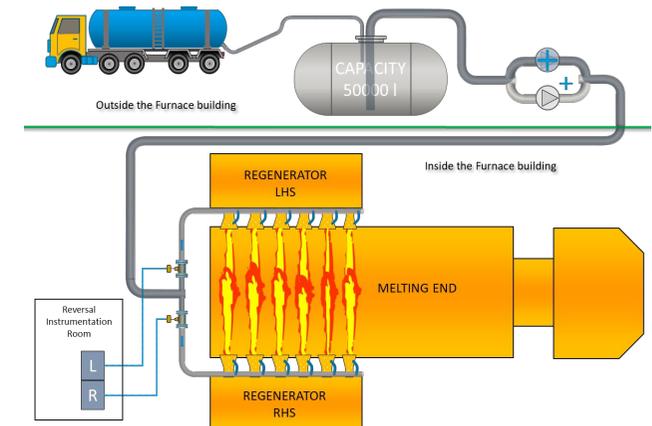
Milena Stanisci, Head of Manufacturing Excellence

After Ukraine's invasion a disruption of European gas supply, totally or partially, programed or accidentally, was considered and consequences and alternatives evaluated. Although most countries decided to increase their reserves and look for alternative sources, the glass industry could be severely affected. Our main concerns are the nine floats in Europe, all of which are gas fired, that could be seriously damaged under a significant gas shortage. We quickly developed an emergency plan to ensure that each European float can be protected by putting them on hold in a controlled manner by firing liquid fuel in case of severe gas shortage.

The key actions included:

- Some lobbying through glass associations in each country, aiming to achieve high priority for our industry, in case of natural gas limitation/stoppage.
- Capital investments that enabled our floats to go on hot hold with liquid fuel.
 - This was the key action to protect our assets in case of gas supply lower than 50%. Our goal was to be ready by the European winter and we successfully achieved it.
 - For this investment execution there are actions ongoing to: a) secure liquid fuel procurement & supply and; b) increase the readiness to hot hold with proper training and procedures.

The execution of the above plan was in the hands of the plant managers, supported by regional and global functions. In parallel, work progressed on a commercial strategy to address the various scenarios potentially arising.



Risks and Risk Management

Risk Focuses

Sustainable Supply Chain Steering Group

Jaroslav Plewniok, Procurement Manager – Supplier Capability & Development

In March 2022 the Sustainability Steering Committee formed a steering group to specifically focus on Sustainable Supply Chains. Its objectives were to:

- Support NSG’s sustainability objectives, in particular the SCOPE3 emissions targets* *Please see pages 22 to 29.
- Ensure compliance with developing legal frameworks in all regions where NSG operates
- Meet the expectations of investors and become a supplier of choice to our customers
- Manage all aspects of supply chain risk
- Inspire our employees.

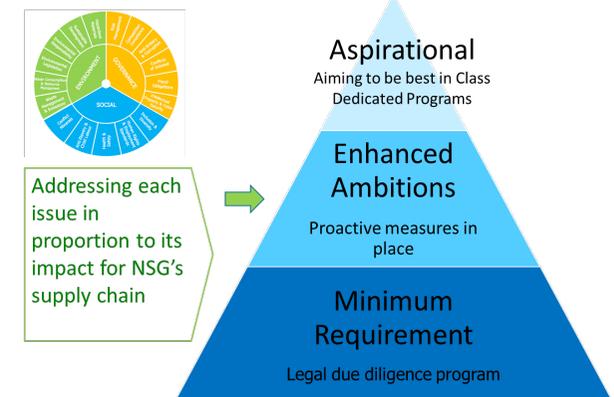
The Sustainable Supply Chain Steering Group (henceforth Steering Group) is made up of senior managers from all business areas, regions and central functions. Its early conclusions were:

- Sustainable supply chains are a concern for everyone who is involved with the goods and services purchased by the Group, and therefore all employees.
- Sustainability is part of a culture change in NSG
- Data is essential and hence this project is linked to NSG’s digital transformation.
- It is key that we follow the principles of the International Standard, ISO 20400: Sustainable Procurement.

Following on from this, the Steering Group will now assess the wide range of Sustainability challenges and opportunities in the Supply Chain and assign priorities according to the impact of each issue. As a minimum, NSG will implement and maintain due diligence programs to ensure that legal compliance and risk management is achieved. There will then be a smaller group of concerns where an enhanced approach is required, requiring more specific goals and actions to be put in place. Finally, at the highest level, the Steering Group will identify a small number of Supply Chain Sustainability Issues. These are issues like Greenhouse Gas Emissions, where the challenge or opportunity is the greatest. We look forward to updating you next year on our progress in the journey to implementing the Sustainable Procurement that we both need and deserve.



Classification of Sustainability Issues in the Supply Chain



Business Results of 2022/03 and Forecast of 2023/03 for each SBU

Architectural glass business



2022/03 results

The Architectural business recorded cumulative revenues of ¥ 281,816 million (4Q FY2021: ¥ 215,501 million) and an operating profit of ¥ 28,130 million (4Q FY2021: ¥ 15,670 million).

Architectural revenues and profits increased from the previous year which had been significantly impacted by the COVID-19 pandemic during the first quarter. Revenues were robust reflecting strong volumes and increased selling prices, mitigating the impact of rising input costs.

In Europe, revenues improved with buoyant demand, which resulted in positive volumes and rising price levels. Profits were also improved as a strong operational performance and tight cost control continued to mitigate the impact of high input costs, particularly for energy, and also increasing logistics and raw material costs.

In Asia, revenues and profits were above the previous year. Revenues in Japan continued to improve from the previous year, and other South East Asia markets were also positive, helped by an easing of lockdown restrictions. Demand for glass for Solar Energy was robust.

In the Americas, revenues and profits were ahead of the previous year. Volumes rebounded from the previous year although they were constrained to by low levels of inventory due to a planned cold repair, and also shortages of transportation capacity. Sales of glass for Solar Energy continued to be positive.

2023/03 assumptions

Volume and sales price in the Architectural glass business are expected to remain high reflecting favorable supply and demand conditions in all regions and price increases due to rising energy costs, particularly natural gas in Europe.

In Europe, demand will continue to be strong with renovation demand as well as new construction and sales price will continue to increase as a result of tighter demand, however, profitability will decrease affected by input cost rises especially natural gas reflecting the invasion of Ukraine by Russia and worldwide inflation trend.

In Asia, volume and price in Japan are on a recovery trend and in other countries in Asia expected to continue favorable performance.

A favorable domestic market with economic recovery is expected in North America. In South America, the supply-demand environment is expected to remain tight, and production started in the new float furnace in Argentina will contribute to profit.

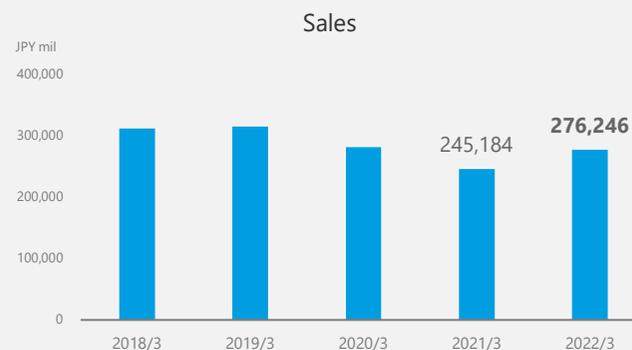
In solar energy glass, favorable demand continues with volume increase is assumed reflecting our key customer First Solar's strong order bookings.

Business Results of 2022/03 and Forecast of 2023/03 for each SBU

Automotive glass business



2021 Mercedes-Benz S-Class Photo courtesy of Mercedes-Benz AG via Daimler Media Site



2022/03 results

The Automotive business recorded cumulative revenues of ¥ 276,246 million (4Q FY2021: ¥ 245,184 million) and an operating loss of ¥ 7,908 million (4Q FY2021: profit of ¥ 1,802 million).

In the Automotive business, cumulative revenues were higher than the previous year which had been badly affected by the COVID-19 pandemic during the first quarter. Despite strong underlying consumer demand, volumes continued to be affected by the Group's customers restricting production in response to a shortage of computer chip components. As a consequence of the restricted demand and also increasing input costs, the Automotive business recorded an operating loss for the year.

In Europe, cumulative revenues improved from the previous year, due to a collapse in demand during the first quarter of FY2021 as a result of the COVID-19 pandemic. Revenues were, however, badly affected by restrictions in volumes caused by computer chip component shortages at the Group's customers. Profitability was negatively impacted by increasing input costs and a low level of asset utilization.

In Asia, cumulative revenues were similar to the previous year. In Japan, vehicle sales continued to be relatively weak, impacted by shortages of computer chips restricting vehicle production. Demand in Malaysia was hit by lockdowns earlier in the year, leading to a suspension of production at the Group's automotive customers.

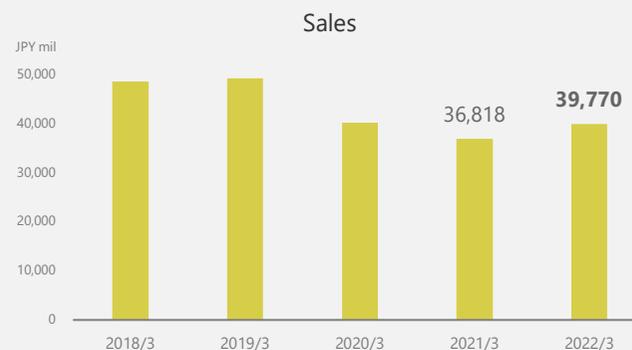
In the Americas, cumulative revenues increased strongly from the previous year. The positive impact of removing COVID-19 restrictions was partly offset by the impact on vehicle production of computer-chip component shortages.

2023/03 assumptions

Although demand for vehicles itself is strong, constraints on vehicle production due to shortages of semiconductors and other components are expected to persist for the first half of the year. However, the supply chain problems at car manufacturers are expected to gradually be resolved in the second half of the year, leading to an improvement in vehicle build. On the other hand, the impact of rising raw material and fuel costs is expected to continue, but we aim to mitigate this through continuous cost reductions, rational price pass-through based on raw material and fuel costs, and sales expansion of value-added products which makes the best use of our unique technologies such as high-precision windshields, with the aim of returning to profitability.

Business Results of 2022/03 and Forecast of 2023/03 for each SBU

Technical glass business



2022/03 results

The Technical Glass business recorded cumulative revenues of ¥ 39,770 million (4Q FY2021: ¥ 36,818 million) and an operating profit of ¥ 9,907 million (4Q FY2021: ¥ 6,707 million).

Revenues and profits continued to be robust in the Technical glass business with improving market conditions in the current year contrasting with the impact of COVID-19 in the previous year.

In the fine glass business, continued cost reduction efforts and a better sales mix provided a strong foundation for a further improvement in results.

In the information devices business, volumes of printer lenses continued to be boosted by work from home and school from home demand.

Demand in replacement markets for glass cord used in engine timing belts was also strong.

Metashine® sales continued to recover, after a long period of difficult market conditions for automotive and cosmetic applications.

The Group disposed of its Battery Separator business during the second quarter of the year.

2023/03 assumptions

In the Technical glass business, favorable business environments are assumed to continue.

In fine glass, a continuous better sales mix and cost reduction efforts are expected to contribute to profit. Also, demand for printer lenses will remain robust with working from home demand, while glass cord demand is expected to increase, particularly in the replacement market.

Evaluation by External Party

CDP Rating

Since 2011, NSG Group has participated in annual CDP* Climate Change and Water reporting.

This year, the Group's CDP Climate Change 2022 score was B management rating. It encourages the Group to continue its ongoing efforts to achieve its 2030 Science Based Targets for CO₂ emission reduction.

NSG Group's CDP Water 2022 score was also B management rating.

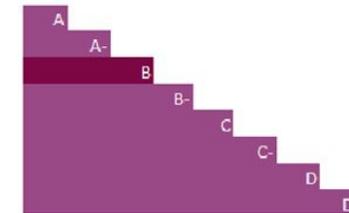
NSG Group uses CDP's global environmental disclosure system to transparently respond to multiple stakeholder requests in a consistent way. CDP reporting allows investors and customers to understand how emerging risks and opportunities on climate change and water security are managed in the value chain and quantify embodied impacts in products.

In addition, as a result of our collaborative efforts with our suppliers in the area of ESG, we were recognized as a leader in supplier engagement in the 2022 CDP assessment. This ranks us in the top 500 companies worldwide, including 105 Japanese companies, out of a total of more than 13,000 companies evaluated, placing us in the top 3% of the glass industry. CDP reporting has guided NSG Group to develop a data driven strategy, prepare for environmental regulation, set challenging Science Based Targets, introduce internal carbon pricing and align to best practice TCFD recommendations.

Annual feedback scores allow NSG Group to track progress and benchmark its environmental performance against the industry peers.



*CDP is a not-for-profit charity that runs the global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts on climate change, water security and deforestation.



Nippon Sheet Glass Company, Ltd received a B which is in the Management band. This is higher than the Asia regional average of B-, and same as the Other materials sector average of B.

Leadership (A/A-): Implementing current best practices
Management (B/B-): Taking coordinated action on climate issues
Awareness (C/C-): Knowledge of impacts on, and of, climate issues
Disclosure (D/D-): Transparent about climate issues

Rating on Climate Change (Excerpt from the CDP report)

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. We used this assessment tool to gain a picture of our CSR performance and to understand areas for improvement. We were rated as Silver regarding our approach to CSR management.



Evaluation by External Party

Inclusion in FTSE Blossom Japan Index

As in the previous year, Nippon Sheet Glass Co., Ltd. has been selected as a constituent of the FTSE Blossom Japan Index, an index of Japanese companies that demonstrate outstanding Environmental, Social and Governance (ESG) performance.



FTSE Blossom
Japan

Evaluation by financial institutions

In 2018, NSG Group has received the highest rating as “especially progressive environmental initiatives” by Development Bank of Japan, Inc. (DBJ) under its “DBJ Environmentally Rated Loan Program”. Also, NSG Group scored highly in the “commitment line syndication based on an ESG/SDGs evaluation” arranged by Sumitomo Mitsui Banking Corporation in 2021.

Please refer to the news releases.

NSG Received High Scores in the Commitment Line Syndication based on ESG/SDGs Evaluation by SMBC (November 25, 2021)

NSG Receives Highest Mark in Environmentally Rated Loan by Development Bank of Japan (October 1, 2018)

External Evaluation of Health Management (METI Health Management Survey)

Nippon Sheet Glass Co., Ltd. has been certified by the Japan Health Council as a 2022 Excellent Health Management Corporation (Large Corporation Division) in 2022 as a result of its continuous efforts to address employee health issues based on its Declaration of Health Management. This certification will continue for three years from 2020.



Certification as a Company Supporting Childrearing

Nippon Sheet Glass Co., Ltd. was certified by the Tokyo Labor Bureau of the Ministry of Health, Labour and Welfare on December 4, 2015 as a “Child Rearing Support Company” under the Act on Advancement of Measures to Support Raising Next-Generation Children, and acquired the “Kurumin” next-generation certification mark. Furthermore, on December 5, 2019, we acquired the “Platinum Kurumin” certification as an excellent company with a high level of commitment among “Kurumin” certified companies. We have been actively supporting childcare and continuing our efforts to become a company where everyone can work more comfortably. Specifically, we have improved the work-life balance by promoting diverse work styles through the creation and distribution of childcare guidebooks, encouraging male employees to take childcare leave, making childcare leave partially paid, introducing telework throughout the company, expanding flextime, interviewing employees about taking planned annual leave, and revising employee nursing care leave regulations. We are also working to improve the work-life balance by promoting a variety of work styles. In addition, efforts to promote the advancement of women include building a women's network, holding women's career workshops, unconscious bias training for managers, and reviewing the personnel system to make it more conducive to diverse work styles and careers. We will continue to promote inclusion and diversity, aiming to be a company where each and every employee can play an active role. For more information, please see the press release.

(Release in Japanese) Obtained “Platinum Kurumin” certification as a childcare support company (as of December 24, 2019)

“Kurumin” Certification for Childcare Support Company (as of December 21, 2015)



History of NSG Group

1918 - 1940s



Foundation and expansion.

Futajima Plant in Fukuoka, Japan

- 1918 America Japan Sheet Glass Co., Ltd. was established in Osaka Japan

- 1920 New capacity added at Kitakyushu

- 1931 Company name changed to Nippon Sheet Glass Co Ltd

- 1936 Operation started at Yokkaichi

1950s-1960s



Business expansion and coming of float glass age

First piece of float glass ever made in Asia

Maizuru Plant in Kyoto, Japan

- 1950 Company shares listed in Tokyo and other stock exchanges in Japan

- 1952 Operation started at Maizuru

- 1964 Operation started at Chiba

- 1965 Float glass production commenced first in Asia with technology licensed from Pilkington

1970s-1980s



Globalization of Architectural and Automotive Glass businesses.

Build a foundation of Technical Glass with new products and technologies.

The SELFOC® is still core technology in NSG

- 1968 SELFOC® developed

- Established Research Center at Itami

- 1970 Manufacturing footprints expanded in Kyoto and Kanagawa

- 1971 The first overseas investment in Malaysia

- 1975 Automotive joint venture established in Mexico

- 1978 Thin glass UFF™ (Ultra Fine Flat Glass) production start

- Launch of the glass fiber business

- 1979 NSG Foundation established to commemorate the 60th anniversary of the Company

- 1980 Operation started at Sagamihara

- 1986 Automotive joint venture established in the US

1990s-Today



Further business globalization and contribution to a sustainable society.

Vietnam Float Glass Co Ltd

- 1990 A 20 per cent stake of Libbey-Owens-Ford Company acquired

- 1995 Automotive and Technical glass joint ventures established in China and an Architectural joint venture in Vietnam

- 1999 Manufacturing footprints expanded in Tsu

- 2000 Shares of Pilkington acquired

- 2001 Increase in Pilkington shareholding to 20 per cent to become an affiliate of the Company

- 2004 Company headquarters moved to Tokyo

- 2006 Acquisition of Pilkington plc

- 2008 Adopted "Company with Committees (Current Company with a Nomination Committee)" system

- Second Architectural joint venture established in Vietnam

- 2011 Production of solar energy glass started in Vietnam

- 2018 100th Anniversary

- 2020 Float lines for solar energy glass established in the US and Vietnam

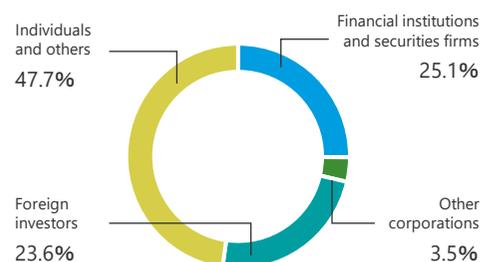
- 2021 Medium Term Vision and Medium Term Management Plan, "Revival Plan 24 (RP24)" launched

Shareholder Information

Corporate Data As of March 31, 2022

Securities Code	5202
Authorized Shares (Note)	177,500,000
Issued Shares (Note)	91,000,199(Common Shares)
Number of shareholders	50,618(Common Shares)
Trading unit of shares	100(Common Shares)
Stock Listing	Tokyo Stock Exchange, 1st section (Moved to the Prime Market on 4 April 2022)
Fiscal Year End	March 31
Annual Meeting of Shareholders	June
Record Dates	Ordinary General Meeting of Shareholders: 31 March Dividend: 30 September and 31 March If necessary, a public notice is given and a record date is set
Transfer Agent	Sumitomo Mitsui Trust Bank, Limited. Stock Transfer Agency Division 4-1, Marunouchi 1-chome, Chiyoda-ku, Tokyo, Japan
Operating office	Stock Transfer Agency Department, Sumitomo Mitsui Trust Bank, Limited 4-1, Marunouchi 1-chome, Chiyodaku, Tokyo, Japan (Mail Address) Stock Transfer Agency Department, Sumitomo Mitsui Trust Bank, Limited 8-4, Izumi 2-chome, Suginami-ku, Tokyo 168-0063, Japan (Telephone Number) 0120-782-031 (toll free in Japan)
Public Notice	https://www.nsg.com/
Accounting auditor	Ernst & Young ShinNihon LLC
Shareholder benefit program	No

Share ratio in status of shareholders (Common Shares)



	2018 March	2019 March	2020 March	2021 March	2022 March
Financial institutions and securities firms	25.2%	26.8%	25.0%	27.3%	25.1%
Other corporations	4.4%	3.4%	4.1%	3.7%	3.5%
Foreign investors	22.0%	25.7%	13.7%	21.1%	23.6%
Individuals and others	48.4%	44.2%	57.2%	47.9%	47.7%

Numbers of shares and shareholders (Common Shares)



	2018 March	2019 March	2020 March	2021 March	2022 March
Numbers of issued shares excluding own shares (1000units)	90,473	90,575	90,621	90,787	90,974
Numbers of shareholders (people)	59,893	55,359	58,333	52,157	50,618

Major Shareholders (Common Shares)

	Number of shares (1000units)	Percentage of shares
The Master Trust Bank of Japan, Ltd. (Trust Account)	13,154	14.46%
Custody Bank of Japan, Ltd. (Trust Account)	2,984	3.28%
MSIP CLIENT SECURITIES	2,589	2.85%
MLI FOR CLIENT GENERAL OMNI NON COLLATERAL NON TREATY-PB	1,779	1.96%
Client stock ownership of Nippon Sheet Glass	1,369	1.51%
JUNIPER	1,360	1.49%
STATE STREET BANK WEST CLIENT-TREATY 505234	1,314	1.44%
JP MORGAN CHASE BANK 385781	1,197	1.32%
JP JPMSE LUX RE NOMURA INT PLC 1 EQ CO	927	1.02%
SUMITOMO LIFE INSUARANCE COMPANY	915	1.01%

Stock indices

Stock indices that include Nippon Sheet Glass Co., Ltd
(As of August 1, 2021)

NIKKEI 225	NIKKEI 500 Stock Average
TOPIX	S&P/JPX Carbon Efficient Index
TOPIX Small	FTSE Blossom Japan Index
TOPIX 1000	

Other related links

Please visit our [website](#) to check past integrated reports and other financial information.

Note: Effective as from 1 October 2016, the Company conducted a share consolidation in which every ten common shares were consolidated into one share.

Note: Where the percentage of shares is calculated, treasury shares are excluded from the total number of issued shares and it has been rounded down to the second decimal.

NSG
GROUP