

Introduction to NSG

April 2022

Nippon Sheet Glass Co Ltd

TSE Code: 5202

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I. NSG Group Today

NSG Group Today

One of the world's largest manufacturers of glass and glazing

- Supplying Architectural and Automotive glass globally and promoting shift to higher added value
- Leading supplier of Technical Glass products including thin glass for display etc., lenses for printers and scanners, specialty glass fiber products

Principal operations around the world, with sales in over 100 countries

27 float lines worldwide * 1*2

Approximately 26,000 employees globally (as of March 2021)

Reference: Consolidated Revenue JPY499.2bn (2021/3)

*1: Refer to Slide 9 for the location of float lines

*2: Refer to Slide 45 for the float process

History

Globalized with the acquisition of Pilkington in 2006

<p>1918 - 1940s Foundation & Expansion</p>	<p><u>1918: America Japan Sheet Glass Co Ltd established in Osaka</u> 1931: Company name changed to Nippon Sheet Glass Co Ltd 1935: Yokkaichi site opened</p>
<p>1950s - 1960s Capacity Expansion and Start of Automotive Glass</p>	<p>1950: Listing on stock exchanges in Japan 1951/63: Maizuru / Chiba sites opened 1965: First float glass production in Asia at Maizuru site</p>
<p>1970s - 1990s Overseas Expansion & Diversification</p>	<p>1971: First overseas investment made in Malaysia 1978/79: Ultra Fine Float™ / glass fiber business launched 1995: Overseas investment expanded including China and Vietnam</p>
<p>2000s Acquisition of Pilkington & Globalization</p>	<p>2004: Headquarters moved from Osaka to Tokyo <u>2006: Acquisition of Pilkington, becoming global leader in flat glass</u> 2008: “Company with committees” governance adopted</p>
<p>2010s~ Shift to Value-added Business & Focus on Financial Stability</p>	<p>Nov 2018: Announcement of “Our Vision” May 2021: Announcement of Medium Term Vision and Medium Term Management Plan, “Revival Plan 24 (RP24)”</p>

Management Principles – “Our Vision”

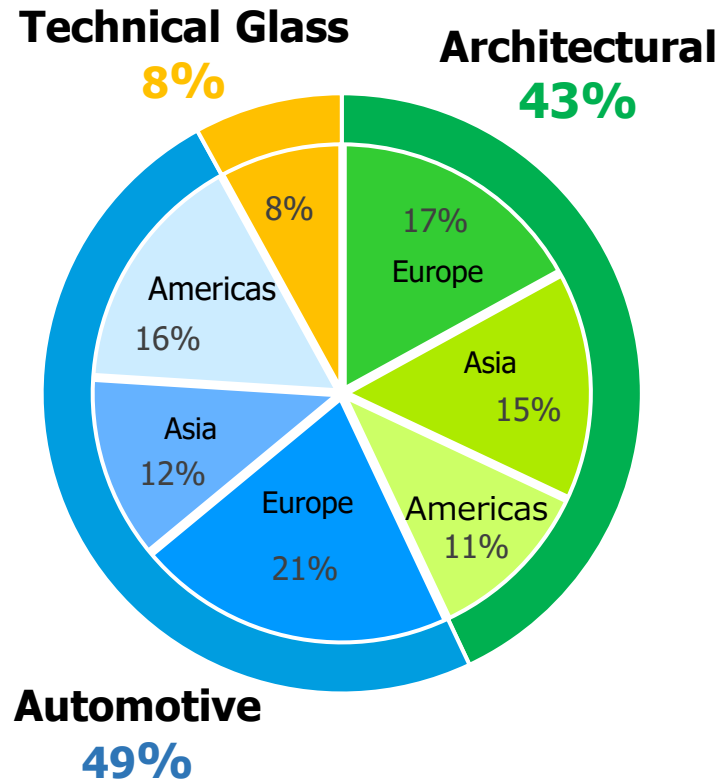
Announced in November 2018, at the Company’s 100th Anniversary



Businesses

Three Global Businesses: Architectural, Automotive, and Technical Glass

Revenue by Business & Region



Architectural

Products

- Building glass & glazing
- Glass for solar panels

Business

- 27 float lines operated globally
- Leading supplier for thin film solar panels

Automotive

Products

- Glazing for new vehicles
- Glazing for replacement markets

Business

- Key operations in 14 countries
- Supplying world's leading vehicle manufacturers
- Key player globally in automotive aftermarket (AGR) glazing distribution and wholesale

Technical Glass

Products

- Thin glass for display etc.
- Lenses for printers, telecommunication devices and medical endoscopes
- Battery separators, glass code for car engine timing belt, etc.

Business

- Key operations in Asia and Europe
- Unique 'Number One' and 'Only One' niche products

Products

Contributing to society with a variety of glass products

Architectural



↑ Optiwhite™ used for Midtown Hibiya in Tokyo



↑ Glass for electrochromic applications
Courtesy of View Inc.



↑ Glass for thin film Solar panels
Courtesy of First Solar Inc.



↑ Antiviral glass

Automotive

- Windshields with head-up display (HUD)



Courtesy of General Motors



- Lightweight laminated glass
- Infrared reflective solar control coating

- Glass compatible with ADAS*



Technical Glass



↑ SELFOC™ Lens Array



↑ Metashine™



↑ Antibacterial and antiviral coated glass

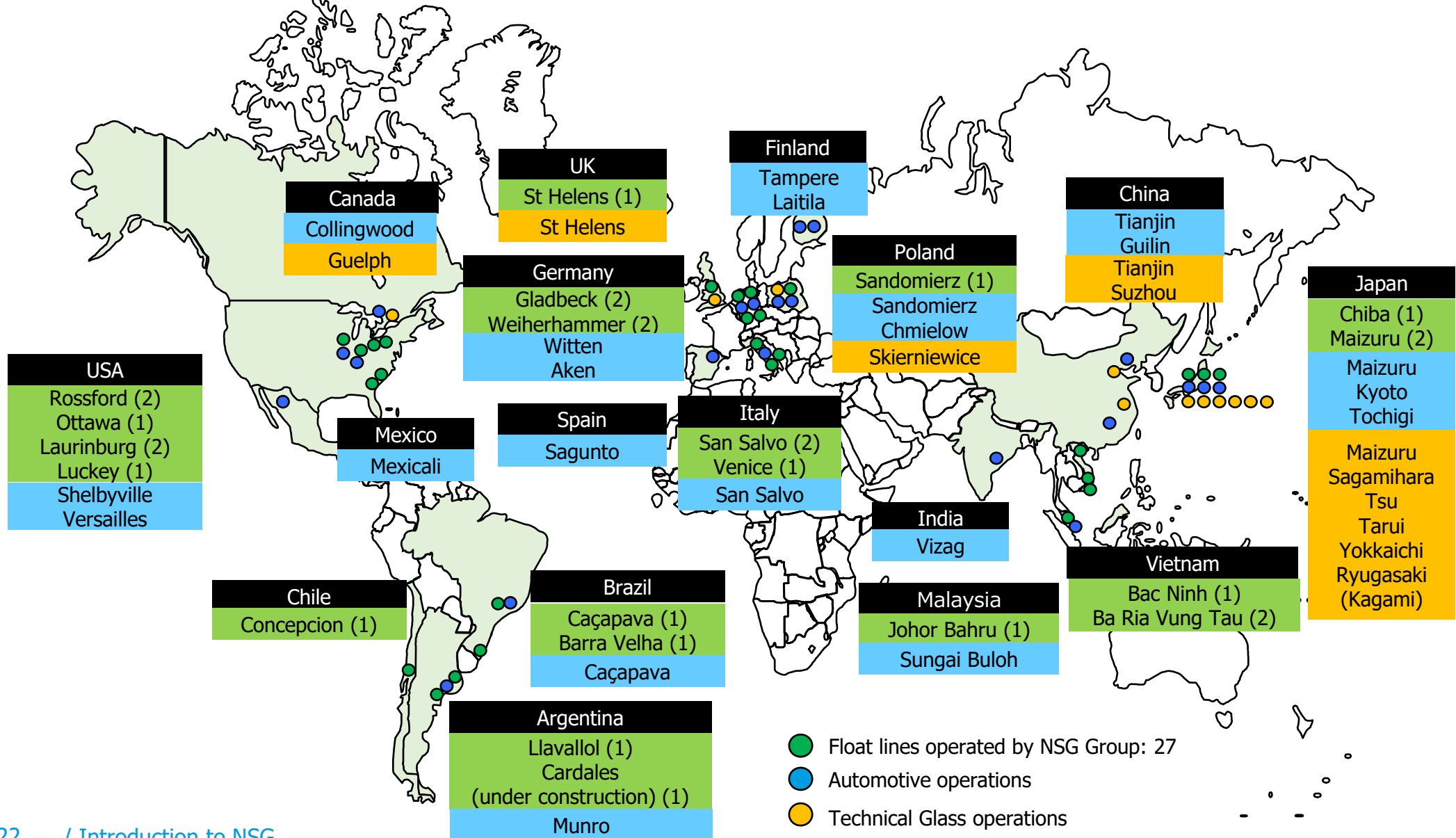


↑ Glass cord



↑ Super Glass Paper™

Global Footprint



II. Medium Term Vision

NSG Group's Medium Term Vision

Medium Term Vision: A global glass supplier contributing to the world with high value-added glass products and services

Three areas the Group aims to contribute to

Three business areas

Safety & Comfort

Home and workplace



Public space



Car interior space



Eco society

Renewable energy



Smart grid



ICT

High speed communication



Factory automation



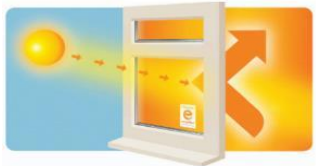



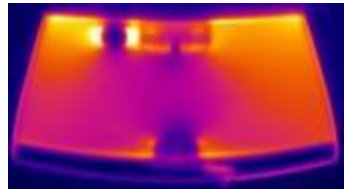




CASE



The future direction of the Group

- To never fail to take up challenges and follow through to deliver results
- To continue to provide employees with opportunities to grow and find joy in working

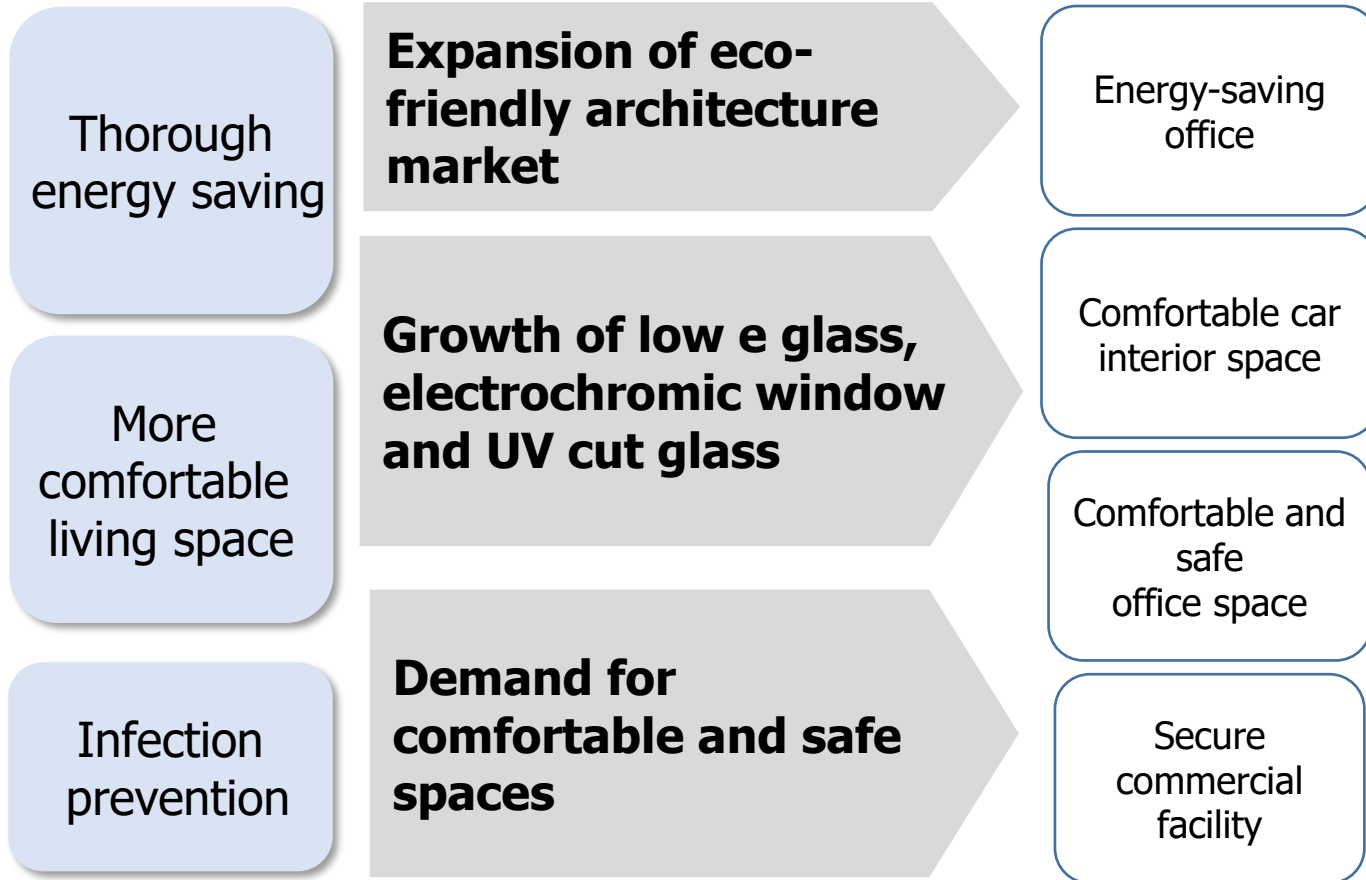
Three Areas of Contribution & Products

	Architectural	Automotive	Creative Technology & New
Safety and Comfort	<ul style="list-style-type: none"> • Conductive coating • Antimicrobial & antiviral coated glass • Low e glass 	<ul style="list-style-type: none"> • Tinted glass optimized for solar performance • Infra reflective and ultra violet protection • Low e glass 	<ul style="list-style-type: none"> • Antimicrobial & antiviral coated glass 
Eco Society	<ul style="list-style-type: none"> • Glass for thin film solar panels • BIPV* 	<ul style="list-style-type: none"> • Heated windshields 	<ul style="list-style-type: none"> • Super Glass Paper (SGP) • High modulus glass fiber • Anti-corrosion filler 
ICT	<ul style="list-style-type: none"> • High reflection glass 	<ul style="list-style-type: none"> • Windshields for head-up display (HUD) • Lightweight glass • glass antenna 	<ul style="list-style-type: none"> • Micro Lens Array • Industrial timing belts 

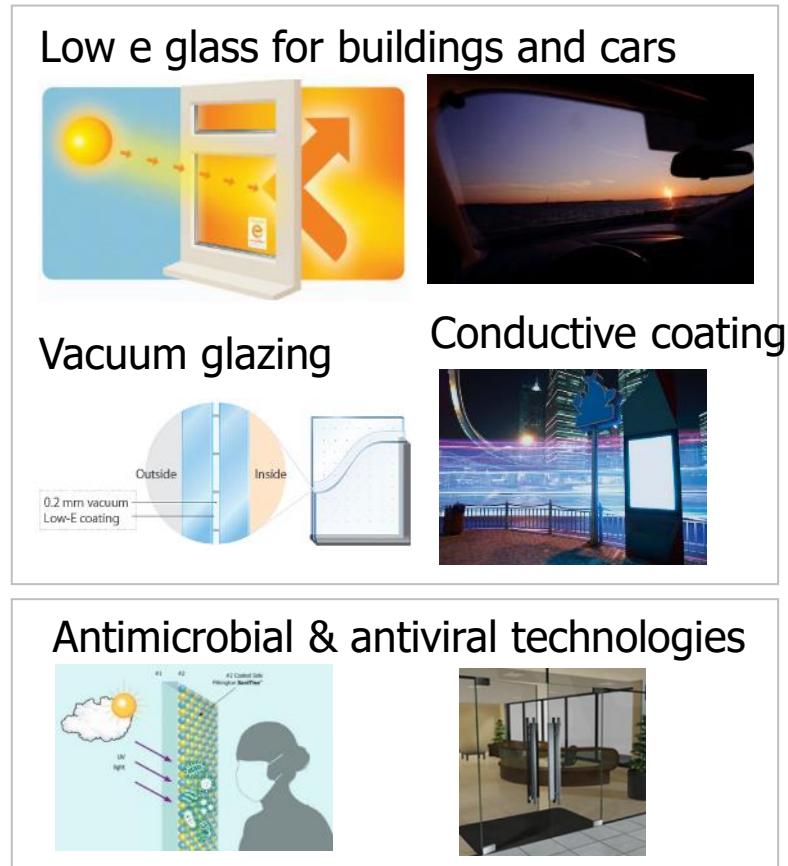
Safety and Comfort

Pursue the value of glass essential in creating comfortable spaces for people

Accelerating changes in needs in the medium to long term



Core technologies to be developed




Promote shift to renewable energy infrastructure with core and production technologies


Development of renewable energies

Renewable energy will account for circa 50 percent of total power generation in 2030


Dramatic expansion of solar power generation




Growth of wind power generation



BIPV



Smart grid



Core technologies to be developed

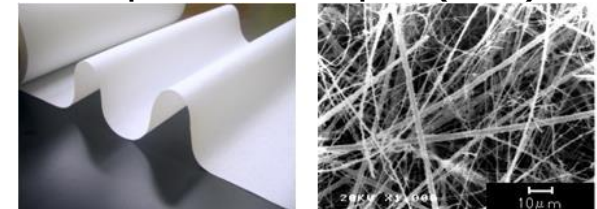
Transparent conductive oxide coating for solar power generation



High modulus glass fiber and anti-corrosion filler



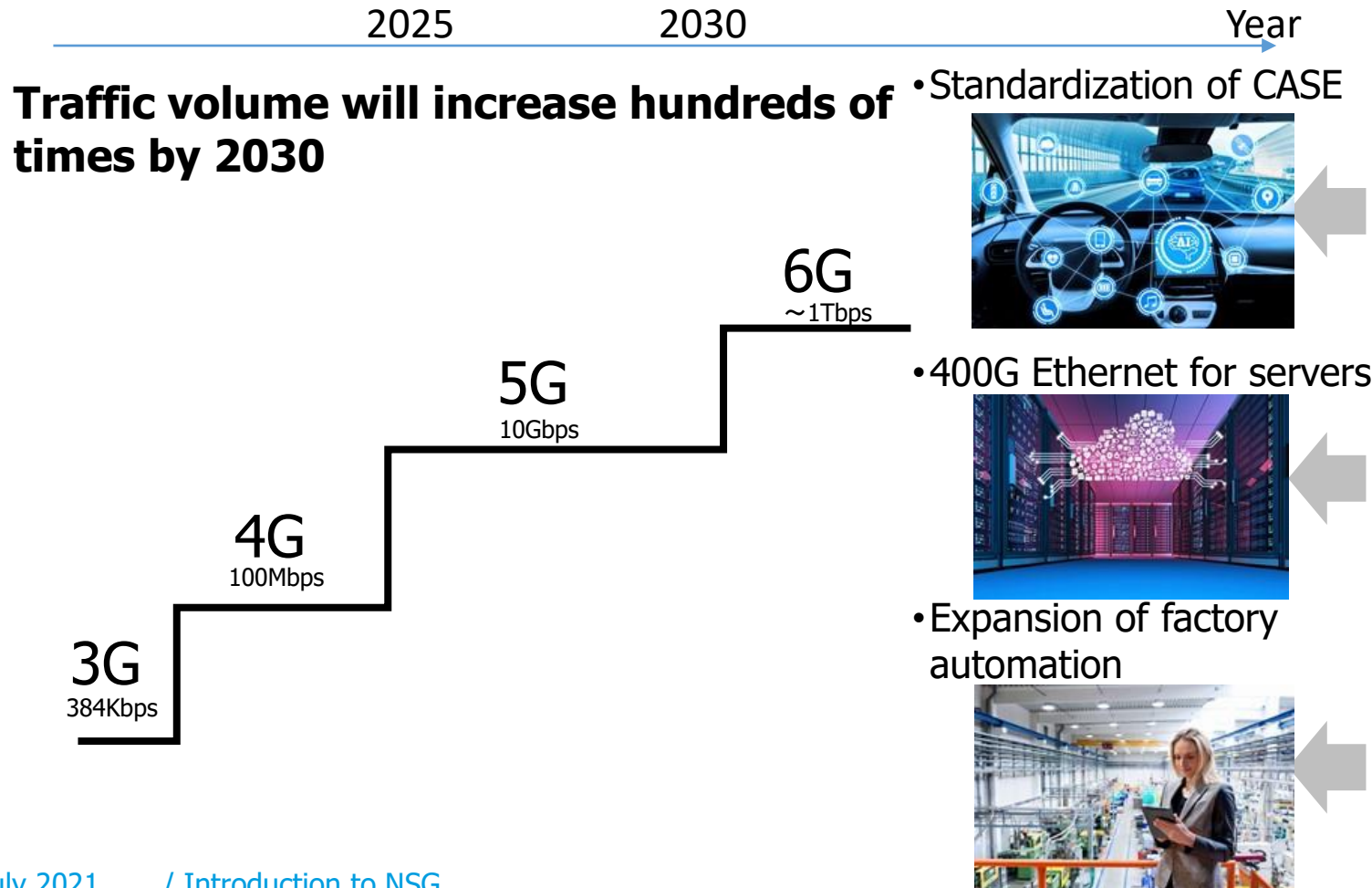
Super Glass Paper (SGP)



Develop key components necessary for digitizing and utilizing information & high speed communication

Dramatic increase in communication speed and capacity

Core technologies to be developed



<p>HUD windshield</p>	<p>Lightweight glass</p>
<p>Micro lens</p>	<p>Lens for 400G</p>
<p>Micro lens array</p>	<p>Industrial belts</p>

III. Medium Term Management Plan “Revival Plan 24 (RP24)”

Roadmap to Achieve Medium Term Vision

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

Review of Previous Medium-term Plan (MTP)

- As the issues of relatively high fixed cost and cyclical nature of the business remain, further structural reform is needed
- The financial base has weakened significantly due to the pandemic

- Financial sustainability
- Transformation into VA Glass Company*

18/3

21/3

22/3

24/3

25/3

MTP Phase 2

Covid
19

**Step I (RP24)
Business transformation**

Step II
Sustained growth cycle

Establish a sustainable growth cycle through business transformation under RP24 to achieve Medium Term Vision

Fundamental transformation
Restoration of financial stability
Business portfolio transformation

Development of new businesses

Establishing growth cycle

Medium Term Vision

A global glass supplier contributing to the world with high value-added glass products and services

* VA: Value-added

Revival Plan 24 (RP24) – Outline

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

RP24 Policy

- 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

- Under RP24, the Group commits to the following Three Reforms and Two Key Initiatives

Three Reforms

- Cost structure reform: cost reduction and productivity improvement
- Business structure reform: expansion of value-added business; development of new growth businesses; emphasis on investment and asset efficiency
- Corporate culture reform: never failing to take up challenges and following through to deliver results

Two Key Initiatives

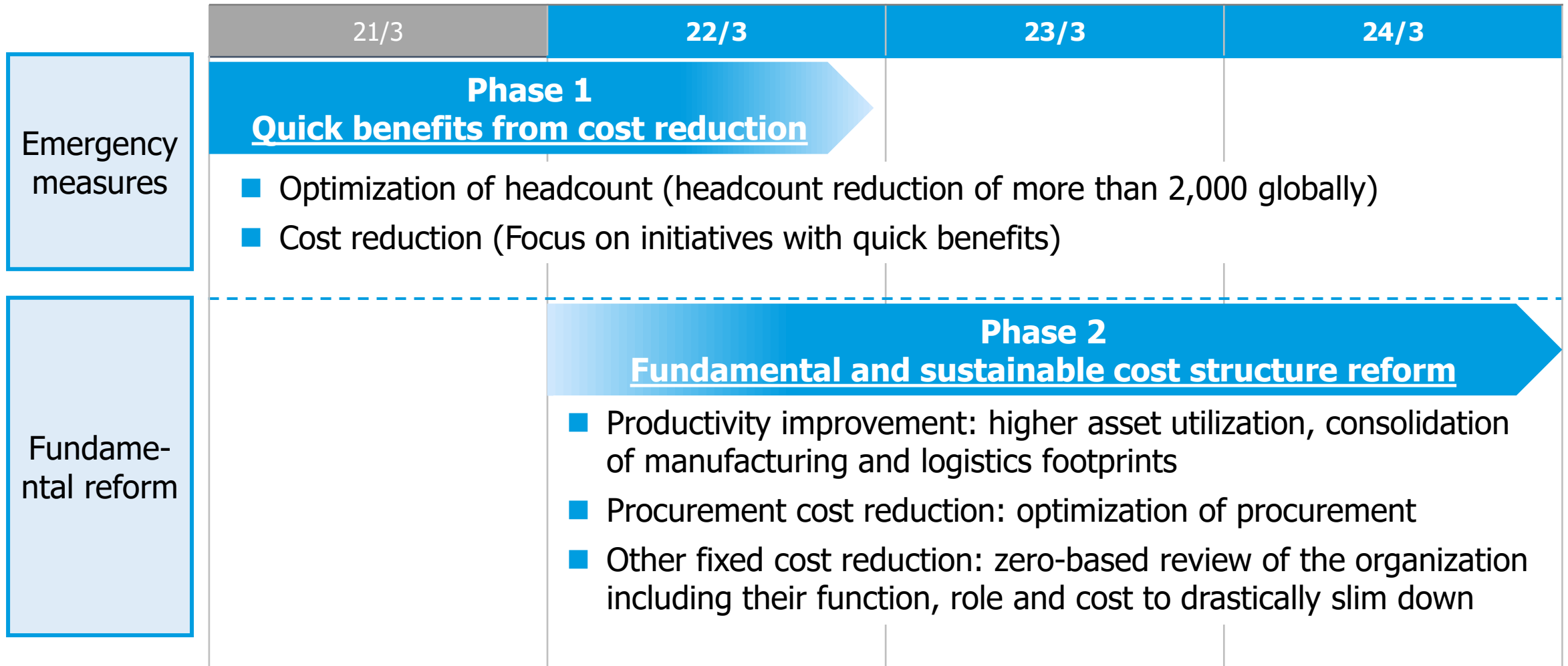
- Restoration of financial stability
- Transformation into more profitable business portfolio

Sustainability

- Work on improvement of existing technology and development of new technology aiming for carbon neutrality in 2050

Reform (1): Cost Structure Reform

Fundamental cost structure reform will be executed to lower the cost base further



Reform (2): Business Structure Reform

Expansion of value-added business, development of new growth businesses and emphasis on investment and asset efficiency

Expansion of value-added business

- Early contribution of strategic investments decided and executed during MTP*
 - Full operation of new solar energy glass production lines in the USA and Vietnam
 - Start operation of a new float furnace in Argentina
- Market development with online coating technology
 - New application development such as electrochromic glass and BIPV

Development of new growth businesses

- Establishing a structure to accelerate new business development and commercialization of new products
 - Concentration of non-flat-glass businesses in the Creative Technology business
- Acceleration of new business development through business alliances

Emphasis on investment and asset efficiency

- Stricter decision-making and management of capital expenditure
 - Redoubled attention to asset efficiency
 - Diversifying away from asset intensive traditional businesses
 - Prioritization of asset allocation to growth and added-value areas

Reform (3): Corporate Culture Reform

Value “customer focus”, “swift decision making and action” and “overcoming difficulties” and change into an organization that never fails to take up challenges and follow through to deliver results

Goals

Actions to be taken in RP24

Management/
organization
structure

- Realization of Aspiration under Our Vision: through innovation, becoming the most trusted partner in all industries we work in”
- Autonomous and collaborative organizations

Corporate
culture

- Autonomous and proactive talent and leadership capabilities
- Encouragement of taking up new challenges without fear of failure
- Corporate culture to follow through to deliver results
- A rewarding place to work for all employees

- Effective response to market and customer needs
- Decision making at a business/business region level with accountability
- Streamlining management and administrative work to reduce cost
- Development and appointment of those who can lead reform
 - Diversity: nationality, gender, age, etc.
 - Inclusion: increasing opportunity
- Recognition of delivering on the reform in incentive schemes
- Encouragement of open communication

Two Key Initiatives

Take two key initiatives; (1) Restoration of financial stability and (2) Transformation into a more profitable business portfolio

Restoration
of financial
stability

- Focus of growth investment on strategically core businesses and selectively allocate and prioritize other capital expenditure
- Thorough review of cost through Cost Structure Reform and improvement of productivity to build a robust business that can generate sustainable profit and free cash flow constantly
- Strict cash management to generate free cash flow, generation of net profit aiming to enhance equity, while opportunistically consider ways to further improve its financial foundations

Transform-
ation into
more
profitable
business
portfolio

- In light of changing trade conditions such as markets and competition, bold strategic review of shrinking or exiting non-core businesses
- Focus of management resources on growth and high value-added areas, considering investment and asset efficiency
- Review of business portfolio, profitability improvement and management cost reduction to establish the cycle of sustained growth

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

Improvement of OP margin via:

- Cost structure reform
- Business structure reform
- Business portfolio transformation

Selective and focused investment

- Control of the total capital expenditure
- Prioritization according to asset efficiency, growth potential and added value



Profitable business to generate stable free cash flow
Constant net profit generation to restore equity ratio of more than 10 percent

IV. Business Strategy Under RP24

Architectural Business

Products

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

Assumption

- Commodity glass will continue to be affected by market conditions considerably
- Demand for high value-added glass will expand against the backdrop of tougher environmental regulations and increasing awareness of health
- Demand for solar energy glass will remain solid with increasing shift to renewable energy
- Demand in emerging markets, especially South America, is expected to be robust
- Demand for value-added glass for industrial application will grow
- Acceleration of the shift from commodity glass to value-added products
 - Add value utilizing proprietary technologies such as online coating and sol-gel coating
 - New market development through finding and collaboration with third parties
- Securing returns on the strategic investments decided and executed during MTP
 - Sales expansion of solar energy glass
 - Start operation of the new float furnace in Argentina

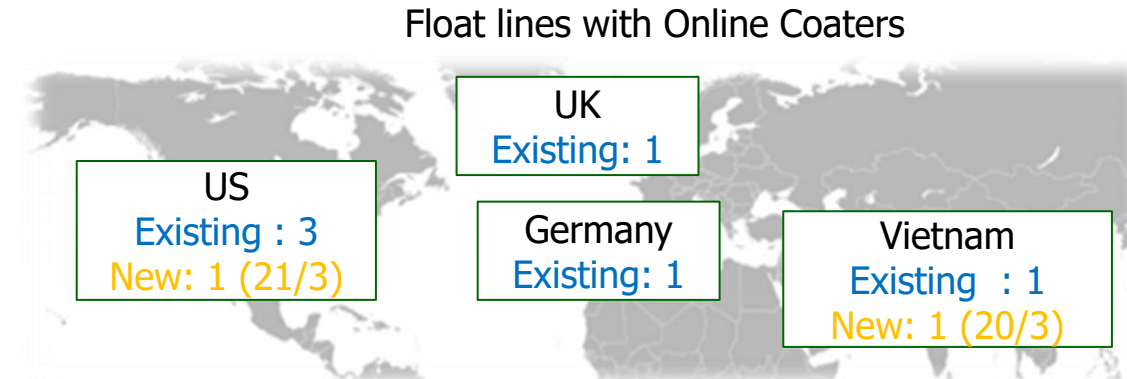
Business Direction

Architectural Business

Acceleration of the shift from commodity glass to value-added products

Strengths and Functions of Online Coating

- NSG’s proprietary technology
- Eight float lines with online coaters globally
- Thin, uniform metallic oxide film deposited over glass while being formed inside the float bath
 - Cost competitive, available in large size
 - Durable and versatile, suitable for further processing and various applications



Function	Use
Conductivity	Heating glass
	Transparent conductive film for touch panels
	Transparent conductive film for thin film solar panels
Infrared reflection	Heat insulation glass
	Heat blocking glass
	Low e glass



↑ Glass for thin film Solar panels
Courtesy of First Solar Inc.



↑ Glass for electrochromic applications
Courtesy of View Inc.

Architectural Business

Ensuring returns on the strategic investments

Solar: demand remains robust with increasing shift to renewable energy

Capacity expansion of glass for thin-film solar panels

- Vietnam: the second float line started in February 2020, upgrading a dormant furnace
- North America: a new float line built in Luckey, Ohio, started operation in November 2020



South America: leveraging 80 years of business experience and solid market position

New float line in Argentina

- Facility: the 2nd float line for Vidrieria Argentina SA (VASA*)
- Site: Cardales (near Buenos Aires)
- Progress: under construction after temporary suspension due to COVID-19
- Market: Argentina and neighboring countries



*VASA: A subsidiary in Argentina, jointly held with Saint-Gobain (NSG: 51%; Saint-Gobain: 49%)

Automotive Business

Develop

Grow

Improve
Profit

NSG
GROUP

Products

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

Assumption

- Vehicle production volumes in the Group's main markets are not expected to recover to the pre-pandemic levels during RP24
- Rapid development of CASE will cause significant changes to the auto industry supply chain
 - While demand for windshields with HUD, glass antenna for 5G and solar control coating on glass for EV is expected to grow, the resource allocation will have to be more selective and focused
 - CASE will also increase its importance in the AGR business





Business Direction

- Drastic cost structural reform including consolidation of manufacturing and logistics sites
 - Optimization of capacity utilization with improved productivity and flexible manufacturing, diversifying away from asset intensive traditional businesses
 - Minimization of logistics cost through thorough reexamination
- Expansion of value-added products by leveraging the Group's proprietary technologies, especially advanced windshields
- Strengthen sales and distribution network in the AGR business

Automotive Business

Expansion of value-added products by leveraging the Group's proprietary technologies, especially advanced windshields

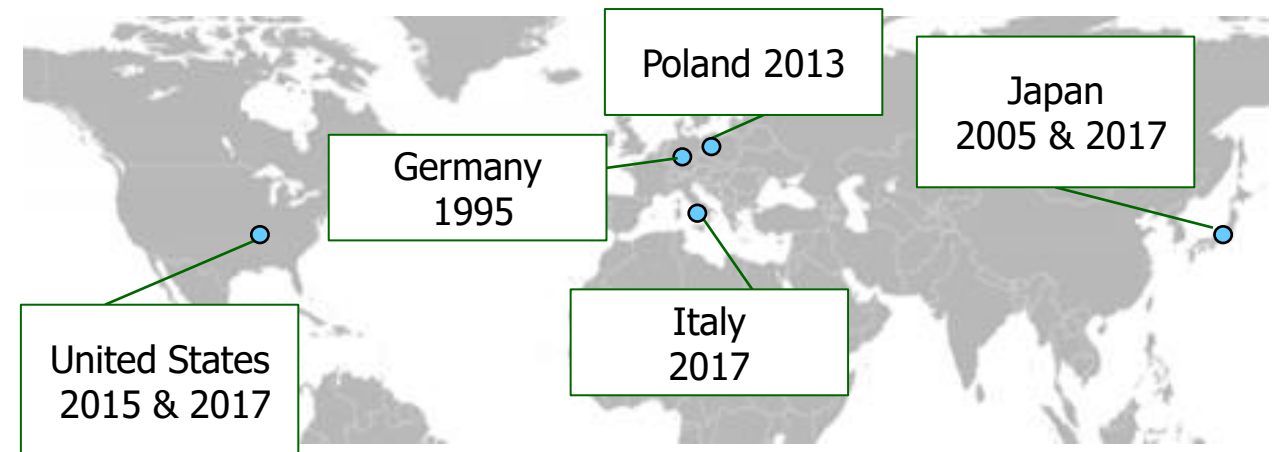
Providing value-added glass for advancing automotive industry, leveraging the Group's technical strengths

-  **Environment: Heated WS**
-  **Safety & Security: ADAS*2**
-  **Connectivity: Next-gen antennas, HUD*3**
-  **Comfort & Convenience: Low e coating**
-  **Style: Complex shaping**

Technology for advanced windshields

- Press bending equipment, APBL*1 developed in house, started production ahead of competitors
- With the advancement of automotive technology such as ADAS*2 and HUD*3, build global production base for advanced windshields whose needs increase

Installation of APBL



*1 APBL: Advanced Press Bending for Laminated Glass

*2 ADAS: Advanced Driver Assistant System

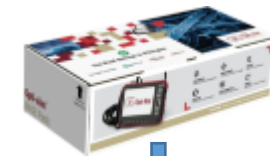
*3 HUD: Head Up Display

Automotive Business

Aim to expand a wide range of sales channels in the AGR business from wholesale to retail business



- Availability & product range
- Well-established wholesale network
- Customer focused services



ADAS calibration

- Impact of ADAS enabled the Group to offer new services

- Opportunity
 - ✓ ADAS systems often require calibration of the cameras after windshield replacement
- Our Business
 - ✓ Opti-Aim™ for ADAS calibration services developed to support the customers in the US
 - ✓ Training services for ADAS calibration are offered in South America

Creative Technology Business

Develop

Grow

Improve Profit



Products

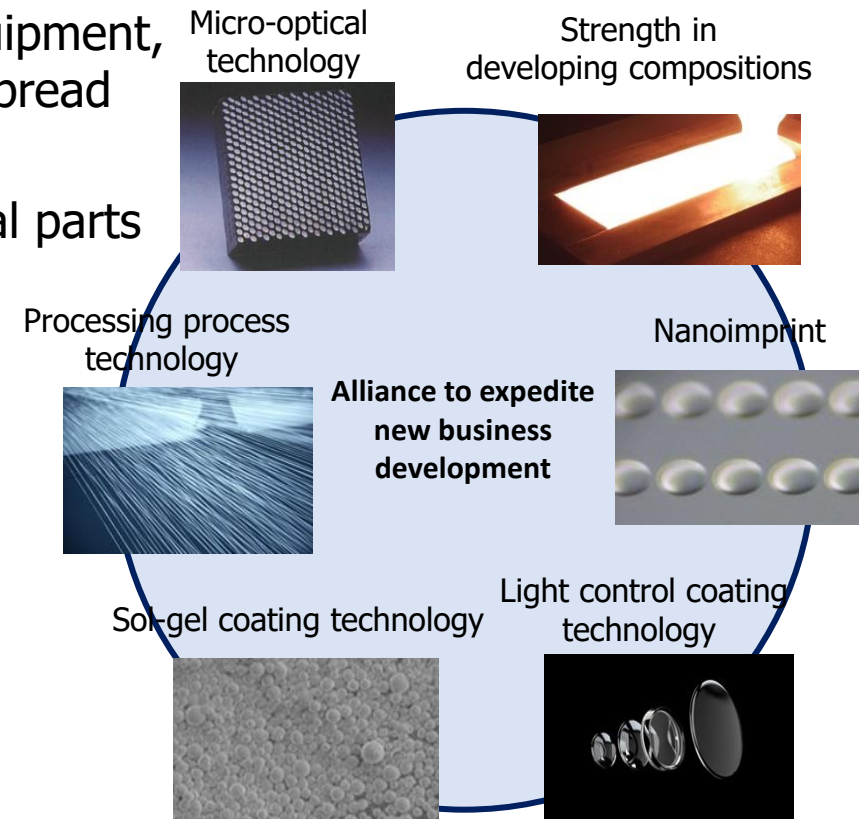
Optoelectronics products, specialty glass fiber products

Assumption

- The advancement of a highly information-oriented society will increase demand dramatically for products related to storage and high-speed and large capacity communication
- The application of image sensing technology to FA equipment, logistics robots and drones and other equipment will spread and expand
 - Growing needs for small and high precision optical parts
- Pursuing niche-top strategy
- Bold alliance to expedite new business development
- Development of unique products in line with changes in market needs centering around ICT
- New customer base through the launch of new products
- Accelerated commercialization of new products to drive business growth

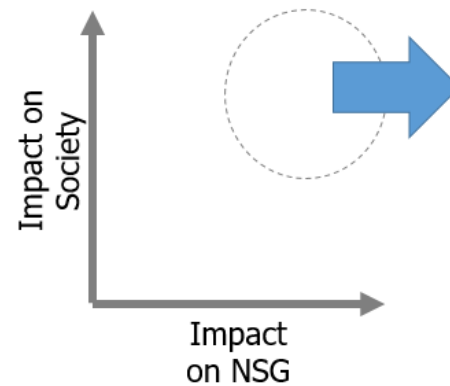
Business Direction

Anticipating changes in market needs, grow the Group's technological base and develop new applications



V. Sustainability for Creating Value

New 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

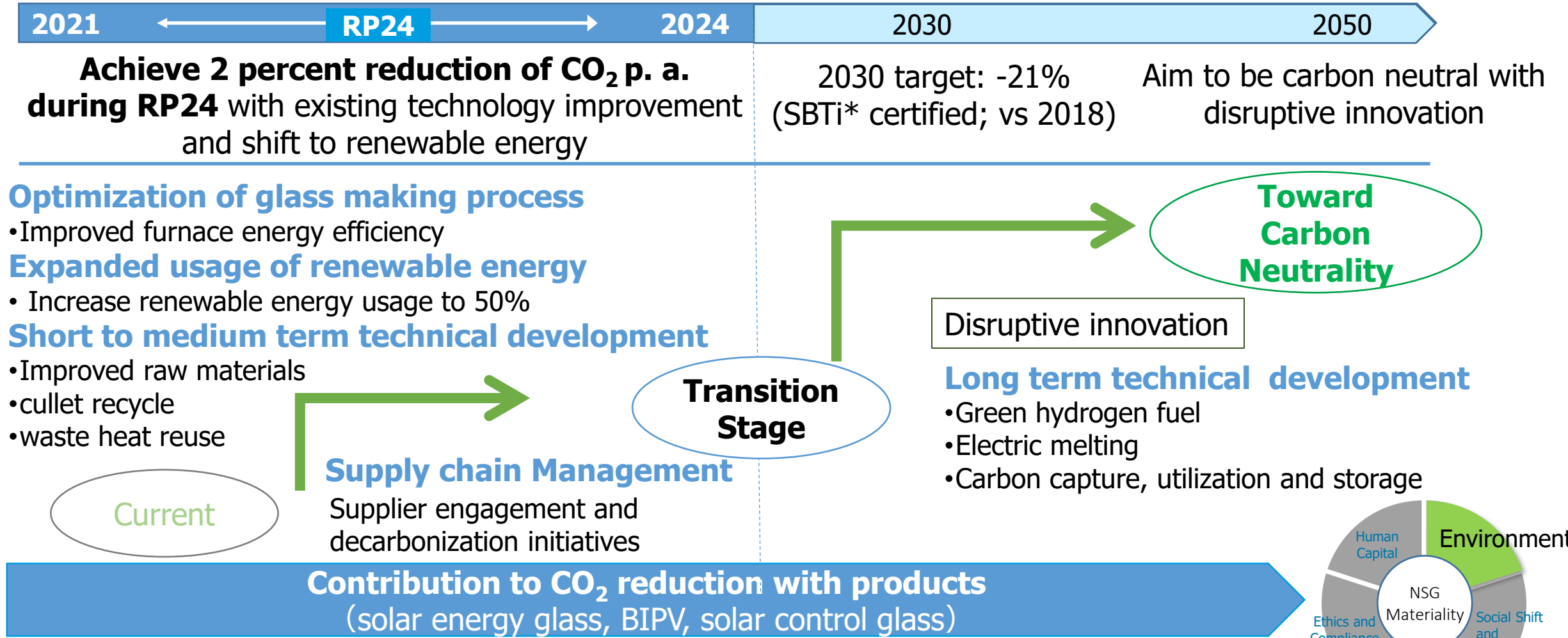
Sustainability Progress

Quantitative targets and KPIs set based on identified materiality

	20/3 Results		24/3 Targets
Energy and CO2 reduction	<ul style="list-style-type: none"> Worse than the prior year due to a reduction in product output associated with deteriorating market conditions 	Environment	<ul style="list-style-type: none"> 8% reduction in CO2 intensity across glass manufacturing operations compared to 18/3 20% reduction of waste to landfill compared to 20/3
Waste	<ul style="list-style-type: none"> 28% reduction compared to 14/3 	Human Capital	<ul style="list-style-type: none"> Reduction of Significant Injury Rate (20% reduction vs. 20/3) Employee Engagement, "Our Vision" penetration ratio (80%)
Safety	<ul style="list-style-type: none"> Significant Injury Rate result was at the same level as 19/3 	Responsible sourcing	<ul style="list-style-type: none"> To achieve and maintain a 95% acceptance of the NSG Supplier Code of Conduct by our key suppliers. To assess and monitor the sustainability performance of 65% of our suppliers by external spend To achieve and maintain an average 50 sustainability score for all assessed suppliers
Employees	<ul style="list-style-type: none"> Improve NSG engagement score (8% increase vs 19/3) Increase inclusion & diversity awareness by training managers etc. 	Ethics & Compliance	<ul style="list-style-type: none"> Hot line utilization (Actual vs. benchmark data collection/analysis) Increase of hotline calls from Managers Report Form (30% increase vs 20/3) Education completion ratio (95% completion by managers within 55 days) Top level communications (Minimum four annually)
Sourcing and transportation	<ul style="list-style-type: none"> 85% of key suppliers have agreed to SCoC 	Sustainable value-added products	<ul style="list-style-type: none"> 46% in FY2020

Approach to Sustainability

Aiming for 2030 reduction target, as first step to carbon neutrality



*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.



Contribution Opportunities for NSG Products

Wide range of solutions to support the evolution of society, including smart buildings, ZEB & ZEH and electric vehicles

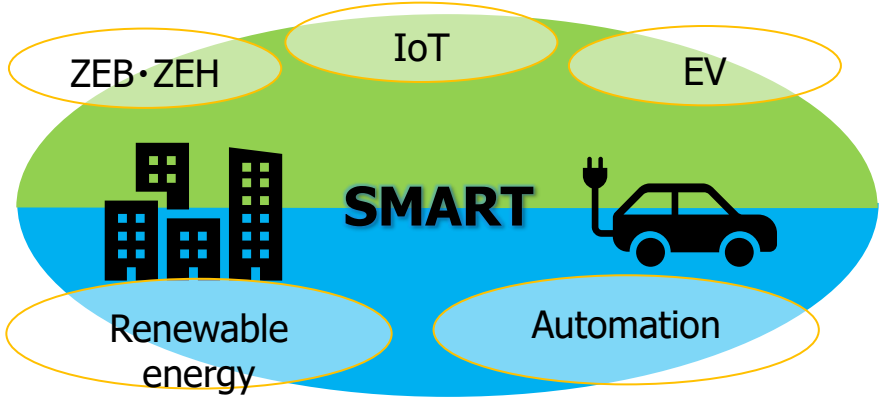
Low e and vacuum glass for solar control and heat insulation

Transparent BIPV joint development

Heated WS to save energy

Online-coated glass for dynamic windows

Electrochromic window by View Inc.



Automotive low e glass to reduce air conditioner usage

Thermochromic glass to control light

Glass for solar farms to supply renewable energy to buildings

Power storage

Sensors for automation

Approach to TCFD

Preparations by cross-functional project team are underway

Governance

- Supervision by the Board of Directors will be further enhanced
- Climate Change is already incorporated in key management process such as Sustainability, Risk Management and Investment Committees

Risk Management

- Climate Change risk including physical and transition risk, has been given high priority in the Enterprise Risk Management process

Task force on Climate related Financial Disclosures

Strategy

- Scenario analyses to identify and quantify potential risks and opportunities being developed to improve the Group's resilience

KPIs and Targets

- Targets for scope 1 & 2 emissions have been certified by SBTi
- More analysis is needed to set a Scope 3 reduction target
- Further review would be made should requirements of society and stakeholders change

- CO₂ emissions of NSG Group:
- <https://www.nsg.com/en/sustainability/environment/air-emissions>
- <https://www.nsg.com/en/sustainability/data/environment>

Contribution to Society

Mission and responsibility as good corporate citizen

Employees

- Development and appointment of reform leaders and promoting “inclusion and diversity” are key actions in the Corporate Culture Reform under RP24
- In 2021, CFO was appointed as the leader to promote inclusion and diversity
- Focus on safety is redoubled against the backdrop of COVID-19 pandemic
- The policy and countermeasures regarding COVID-19 are published on the website



Reiko Kusunose
CFO

Ethics and Compliance

- A group-wide ethics and compliance hotline that can be used by anyone inside or outside the company is available (certified as Whistleblowing Compliance Management System (WCMS))
- A compliance system for high-risk areas such as competition law compliance, ABAC* and conflict of interest is in place
- Ethics and compliance education and communication are conducted at the group and regional level

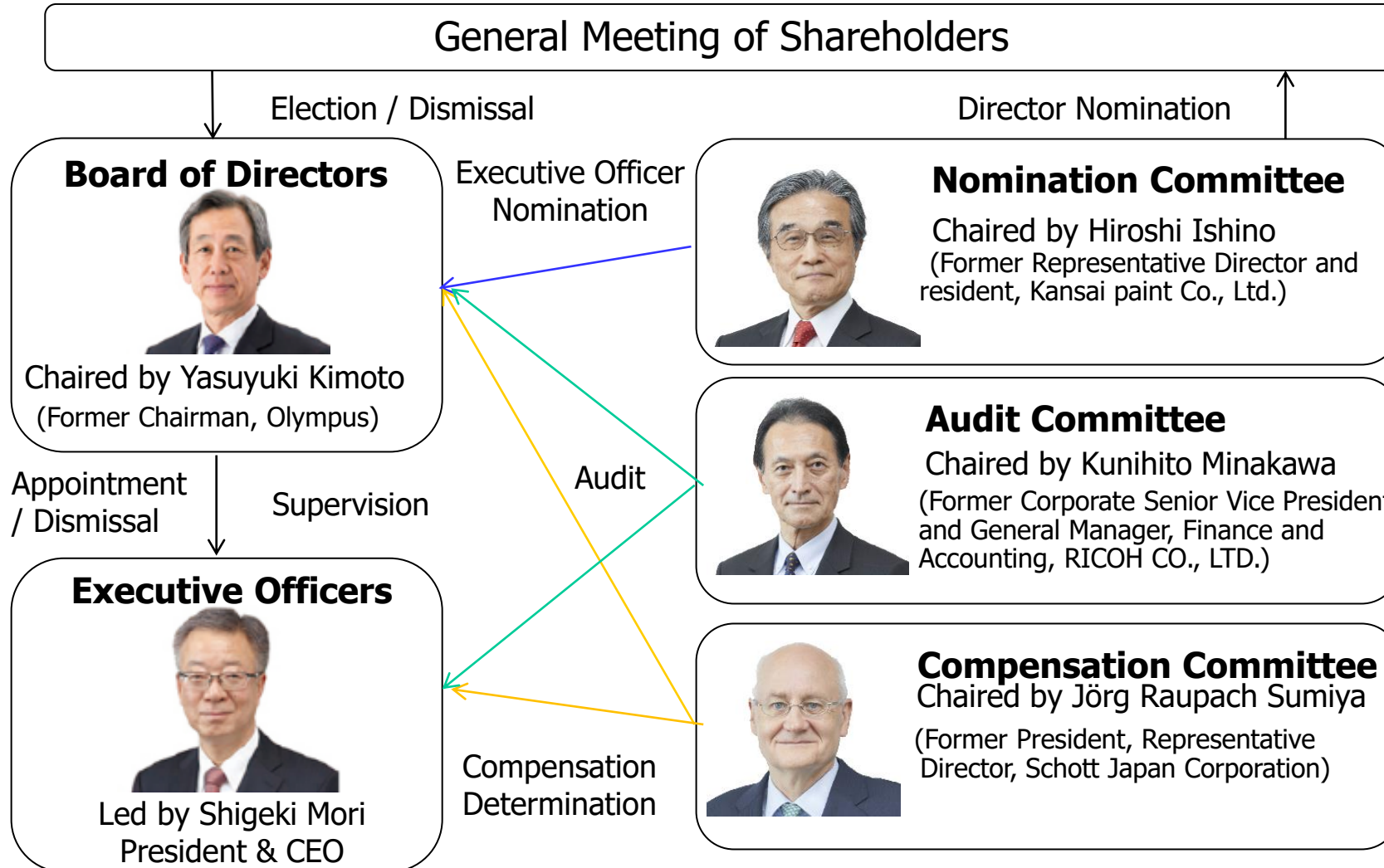
NSG Foundation

- NSG Foundation was established to commemorate the 60th anniversary of NSG with the aim to contributing to the promotion of R&D activities on inorganic materials through research grants, which amounts to JPY1,707 million for 1,327 projects cumulatively

VI. Corporate Governance

Corporate Governance Structure







The Board & Committees all chaired by Independent External Director



Nomination Committee
Hiroshi Ishino (Chairman) Yasuyuki Kimoto Jörg Raupach Sumiya Kunihito Minakawa Shigeki Mori
Audit Committee
Kunihito Minakawa (Chairman) Yasuyuki Kimoto Jörg Raupach Sumiya Hiroshi Ishino
Compensation Committee
Jörg Raupach Sumiya (Chairman) Yasuyuki Kimoto Hiroshi Ishino Kunihito Minakawa Shigeki Mori

Board of Directors

**Robust governance with a majority of the Board of Directors being independent.
Well balanced board of directors to supervise the implementation of RP24**

	Independent External Director  Yasuyuki Kimoto Chairman of the Board	Independent External Director  Jörg Raupach Sumiya Chairman of Compensation Committee	Independent External Director  Hiroshi Ishino Chairman of Nomination Committee	Independent External Director  Kunihito Minakawa Chairman of Audit Committee	External Director  Yoshihiro Kuroi	 Shigeki Mori Director President Chief Executive Officer
<Skill Set>						
Global Company Management Experience	●	●	●	●	●	●
Financial Expertise	●		●	●	●	●
Risk Management/ Governance	●	●	●	●	●	●
Portfolio management/ New Business Development		●	●		●	●
Operational Excellence/ Supply Chain Management			●			●
Marketing/Commercial			●			●

Executive Officers

International executive team

Representative Executive Officers



Shigeki Mori
Director
Representative Executive Officer
President and Chief Executive Officer



Munehiro Hosonuma
Representative Executive Officer,
Vice President and
Chief Operating Officer

Senior Executive Officers



Leopoldo Garces Castiella
Head of
Architectural Glass



Tony Fradgley
Chief Transformation
Officer



Koichi Hiyoshi
CLO, CRO, Company
Secretary, and Officer
in charge of Ethics and
Compliance



Reiko Kusunose
Chief Financial
Officer



Hiroshi Nishikawa
Transformation Director
Asia and Country
Manager Japan



Hisashi Okamoto
Head of Creative
Technology and Head of
Business Innovation
Centre



Rob Purcell
Head of
Automotive OE



Phil Wilkinson
Head of
Automotive AGR

Executive Officers



Mike Greenall
Chief Technology
Officer



Shiro Kobayashi
Sustainability
Director



Yutaka Nakashima
Chief Human
Resources Officer



Iain Smith
Finance Director



Milena Stanisci
Head of Manufacturing
Excellence and
Head of Manufacturing,
Automotive OE

Corporate Governance

Framework to bolster sustainable growth

Diversity & independence of Board of Directors – material decision making and supervision of executives, representing shareholders

- Clear separation of roles between Board chairman and CEO; robust succession plan
- Adequate pay incentives aligned with interests of shareholders

Key developments

2008: “Company with Committees”; 4 Independent External Directors

2012: All 3 Committees chaired by Independent External Director

2013: The Board chaired by Independent External Director

2014: Share purchase element in LTIP; shareholding targets for EOs

2015: Publication of NSG Group Corporate Governance Guidelines

2016: 1st Effectiveness Evaluation; compliance with all the principles of CGC

2021: Disclosure of board members’ skill set

Board Effectiveness Evaluation

Led by Independent External Directors; the following action plans have been set and followed up

- Deeper discussion on key agenda items such as growth, finance, HR and ESG strategies
- More understanding of executive resources and stronger monitoring to improve performance
- Thorough following-up of the executives' execution and delivery of key decisions and tasks
- Promotion of diversity including appointment of non-Japanese and/or female director(s)

Notice

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.

Nippon Sheet Glass Company, Limited

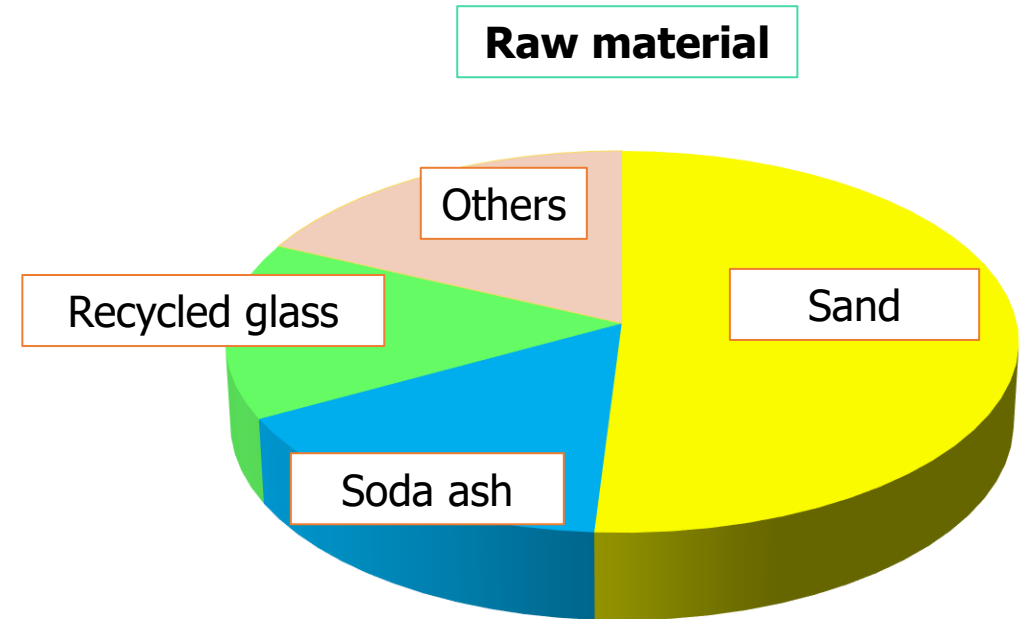
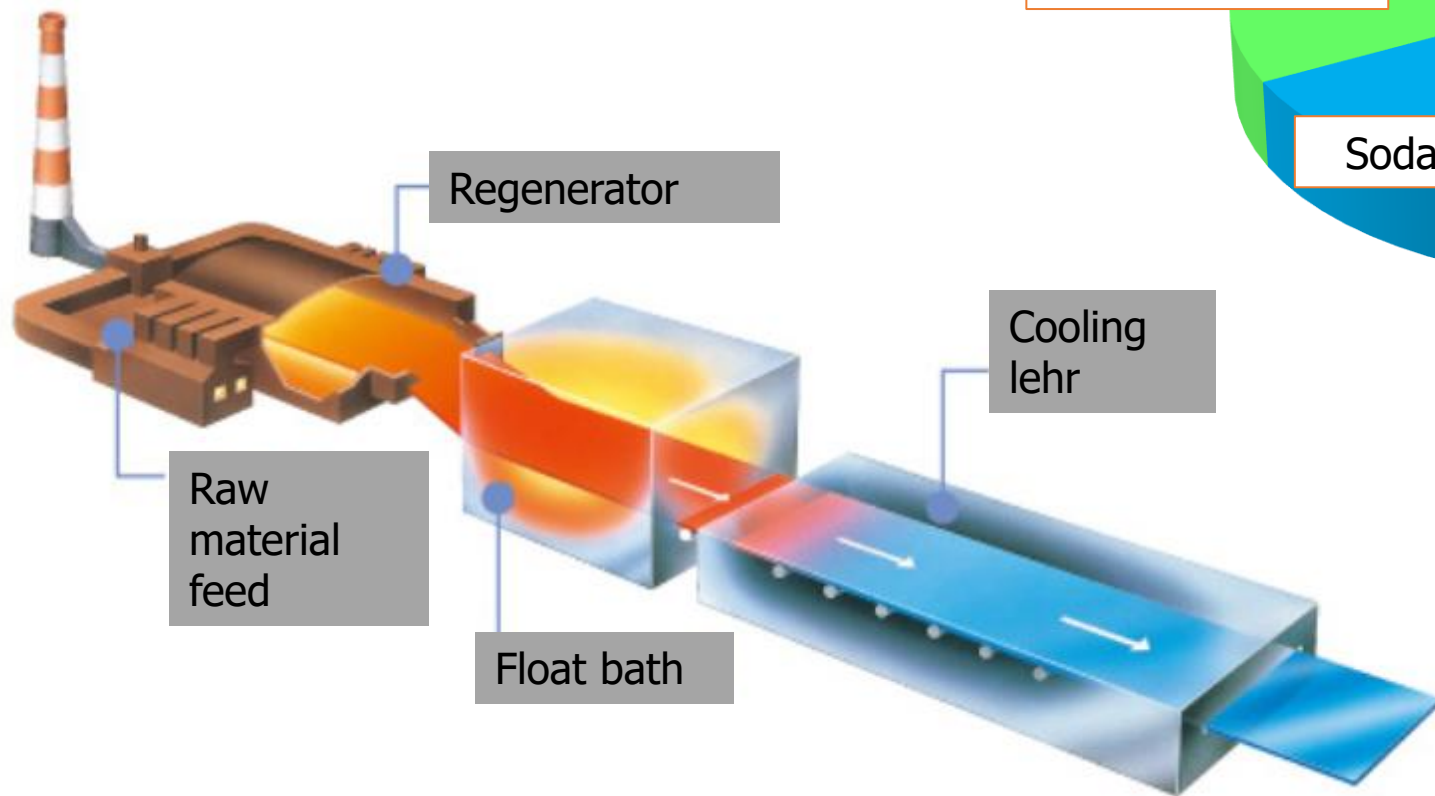
VII. Appendices

- Manufacturing Process P.45~P48
- Solar Panels & Glass P.49
- Energy-saving Regulations P.50
- Shares Information P.51~P52
- Financial Data P.53~P57

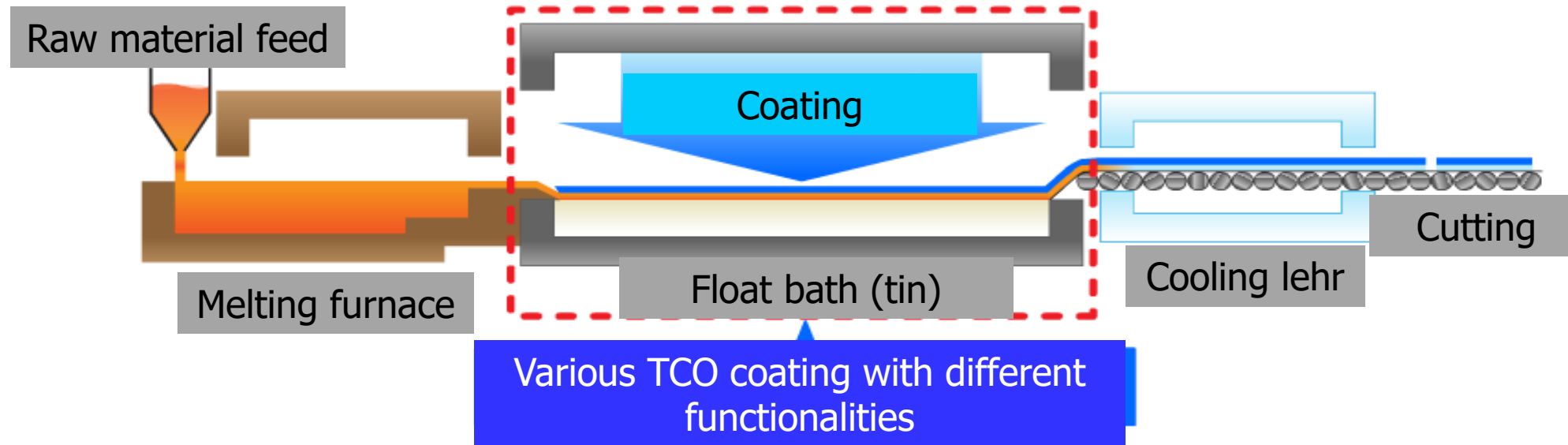
Float Process

Float glass:

Molten glass is poured continuously from a furnace onto a shallow bath of molten tin. It floats on the tin, spreads out and forms a level surface. This method was introduced to the world as the float process in 1959.



Online Coating



- Thin, uniform metallic oxide film deposited over glass while being formed inside the float bath
- Cost competitive, available in large size
- Durable: suitable for further processing & for use as an external glass pane
- Versatile: architectural, solar & automotive applications
 - Technical applications include thin or curved displays, OLED lighting and thin-film sensors

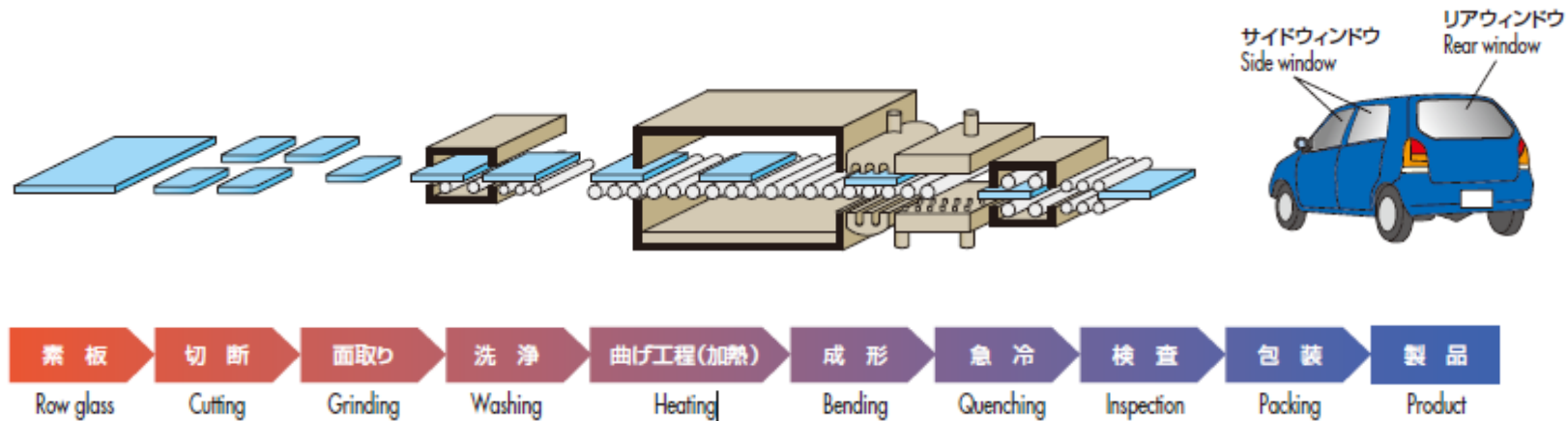
Automotive Glazing – Toughening

Toughened Glass:

Flat glass is placed in a tempering oven, and heated to between 650 and 700°C, which is near the glass softening temperature.

Then the glass is quenched by blowing air evenly on both sides, causing the surface to harden first, with the inside cooling and shrinking later. The result is the formation of a stable compressive stress layer at the surface, and the glass is 3 to 5 times more resistant to impact than ordinary glass.

This glass is mainly used for the side and rear windows of automobiles.



Automotive Glazing – Laminating

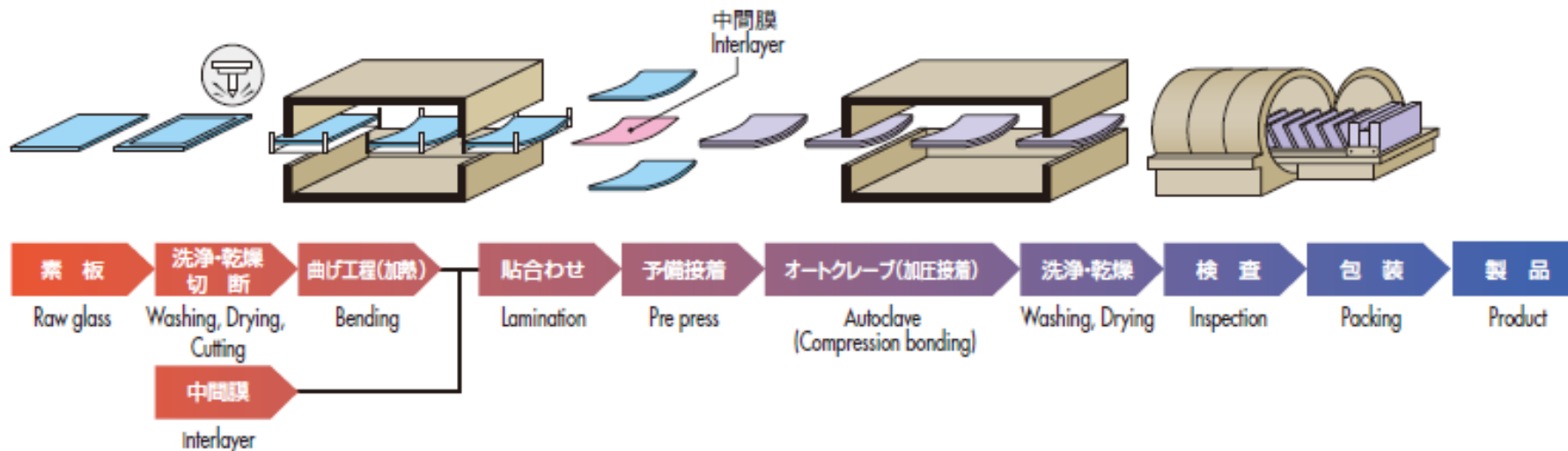
Laminated Glass:

Laminated glass consists of two pieces of glass with a sandwich of transparent plastic interlayer.

This is then placed into an air-pressure autoclave, and treated at high temperature and pressure.

Some special products are made with 3 or more sheets of glass.

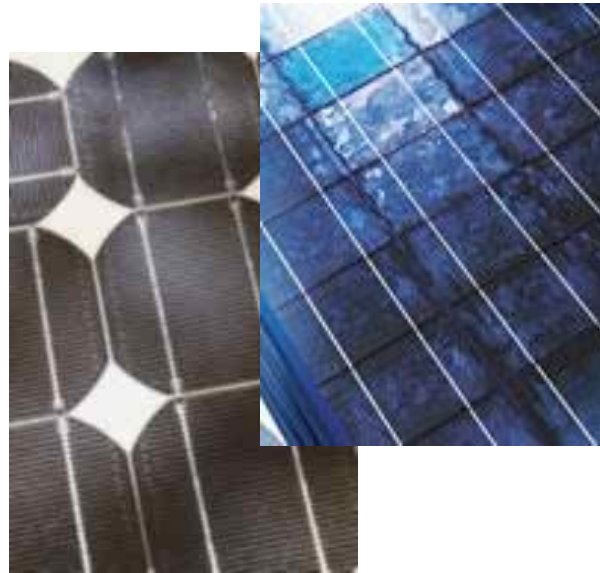
This glass is mainly used for the front windows of automobiles.



Solar Panels & Glass: Crystalline vs Thin Film

Crystalline Silicon Solar Panels

High efficiency, Chinese manufacturers



Low iron rolled glass
+AR (Anti Reflection) coating,
mainly for cover glass

Thin film solar panels

Total cost competitiveness, strength in large size and high temperature applications



TCO coated flat glass, forming part of solar cell

Energy-saving Regulations

Growth opportunities with stricter energy-saving regulations

- In response to heightening calls for CO2 emission reduction, governments across the globe have been tightening building energy-saving regulations and introducing zero-emission building targets.
- Behind in energy saving, the private sector including offices and houses are now adopting more functional windows such as triple glazing with low e coating instead of double glazing or single pane windows. Windows equipped with photovoltaics (BIPV) may pave its way into buildings soon.

<Zero Energy Building Targets>

Japan (Commercial buildings)

- 2020: All new public buildings
- 2030: Net zero of total of new buildings

Japan (Houses)

- 2020: More than half of new custom-built houses built by house building companies
- 2030: Net zero of total new houses



BIPV (Building Integrated Photovoltaics)



Spacia™ (Vacuum glazing)

USA

- 2020: develop marketable net zero energy homes
- 2030: All new commercial buildings
- 2050: All commercial buildings

EU

- 2020: All new buildings

UK

- 2020: All new buildings

Shares Information

History Data

		15/3	16/3	17/3	18/3	19/3	20/3	21/3
Numbers of shares outstanding (common stock*1)	K	903,551	903,551	90,366	90,487	90,594	90,642	90,811
Earnings per share*1	¥	1.9	-55.2	62.0	48.3	115.2	-236.0	-208.0
Book value per share*1	¥	194.6	114.14	941.76	1042.72	978.5	470.9	349.7
Cash dividends Yen*1	¥	-	-	-	20	30	-	-
Stock price (High)	¥	149	142	951	1,080	1,315	965	613
Stock price (Low)	¥	94	64	600	743	767	282	257

Dividend Policy

- Recognizing the distribution of profit to shareholders as one of its important management objectives, the Group has upheld a stable basic policy of declaring dividend payments on ordinary shares based on sustainable business results.
- Dividend payments by the Group will be determined in view of the enhancement of its financial status and accumulation of the appropriate level of retained earnings for future business growth.

Record date for dividend

- 30 September, 31 March

*1: Effective as from 1 October 2016, the Company conducted a share consolidation in which every ten common shares

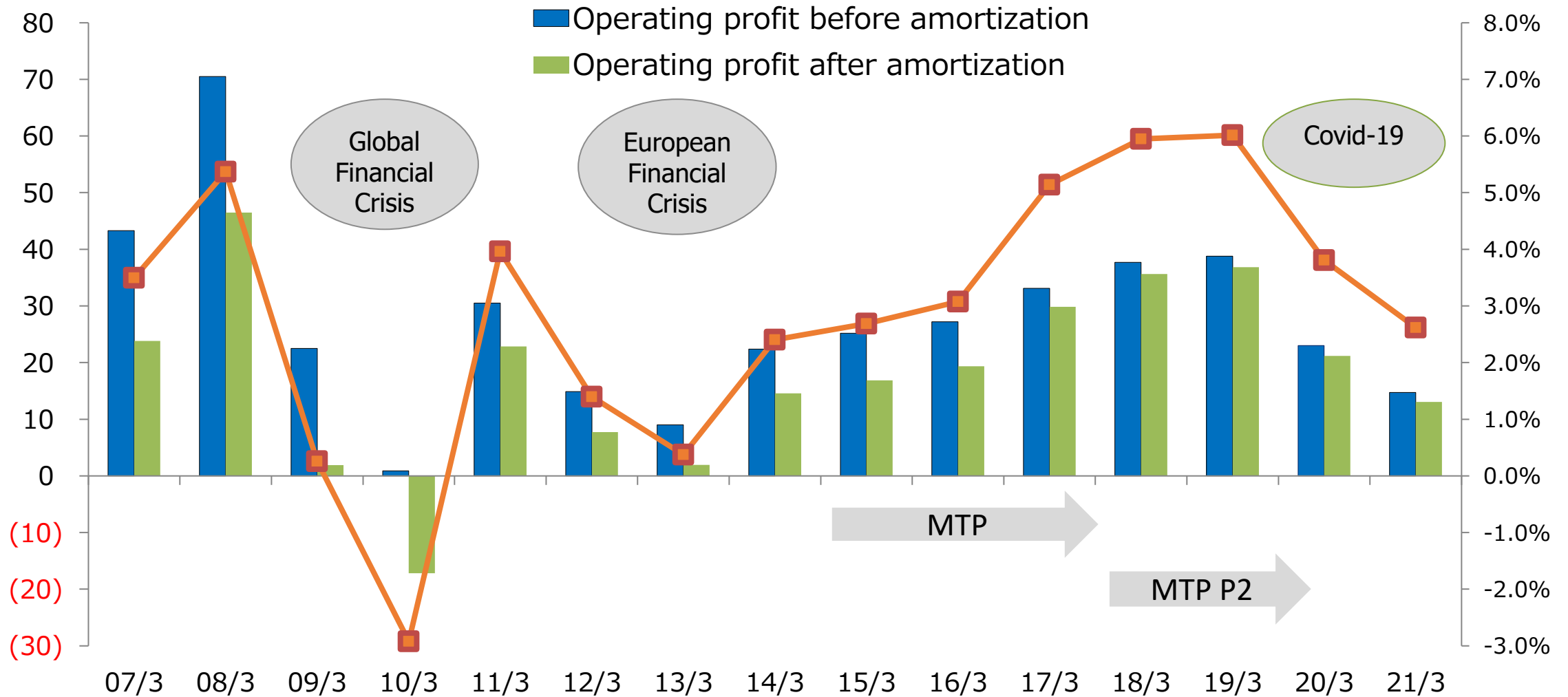
Class A Shares Detail

Redeem Class A Shares at the earliest possible timing, while maintaining financial stability

Amount (No of Shares)		JPY40 billion (40,000 shares) *Number of outstanding shares after redemption as of March 2020: 30,000 (Issued value: JPY30,000m)					
Planned Allottees (Amount & No of shares)		Japan Industrial Solutions Fund II		JPY20 billion (20,000 shares)			
		UDS III Corporate Mezzanine Limited Partnership		JPY10 billion (9,000 shares)			
		UDS IV Corporate Mezzanine Limited Partnership		JPY10 billion (11,000 shares)			
Voting Rights		None					
Preferred dividend rate (Cumulative)		31 March 2017 ~ 31 March 2018		4.5%			
		1 April 2018 ~ 31 March 2020		5.5%			
		1 April 2020 ~		6.5%			
Call option (Company's option)	Consi-deration	Cash		Put option (Planned Allottees' option)	Consi-deration	Ordinary Shares	
	Redemp-tion	1 April 2018 or later			Redemp-tion	1 July 2020 or later, unless conversion restriction removal reason exists *A conversion restriction removal reason occurred on 22 May 2020	
	Redemp-tion Amount per share	Paying-in amount per share + cumulative accrued dividend amount + daily prorated accrued preferred dividend amount + redemption premium			No. of Ordinary Shares to be Issued per Class A Share	(Paying-in amount per share X ordinary share redemption premium) / acquisition price	
		<Redemption premium>				<Ordinary share redemption premium>	
		1 April 2018 ~ 30 June 2018 : 1.08		1 April 2017 ~ 30 June 2017 : 1.05			
		1 July 2018 ~ 30 June 2019 : 1.15		1 July 2017 ~ 30 June 2018 : 1.08			
		1 July 2019 ~ 30 June 2020 : 1.22		1 July 2018 ~ 30 June 2019 : 1.15			
		1 July 2020 ~ 30 June 2021 : 1.29		1 July 2019 ~ 30 June 2020 : 1.22			
		1 July 2021 ~ 30 June 2022 : 1.36		1 July 2020 ~ 30 June 2021 : 1.29			
		1 July 2022 ~ : 1.43		1 July 2021 ~ 30 June 2022 : 1.36			
				1 July 2022 ~ : 1.43			
Design		<ul style="list-style-type: none"> The Planned Allottees may exercise their put option for 4,000 or less Class A Shares, when the Company notifies the exercise of its call option for the entire outstanding Class A Shares. 					

Operating Profit & Operating Profit Margin

(JPY bn)



Operating profit margin : based on operating profit after amortization of non-tangible assets arising from the acquisition of Pilkington plc

Financial Data (1)

		15/3	16/3	17/3	18/3	19/3	20/3	21/3
Revenue	¥ billion	626.7	629.2	580.8	598.9	612.8	556.2	499.2
Architectural		252.9	262.6	237.7	238.0	247.3	233.7	215.5
Automotive		314.0	316.3	296.6	311.4	314.6	281.0	245.2
Technical Glass		58.7	49.5	46.1	48.4	49.1	40.1	36.8
Others		1.1	0.8	0.4	1.1	1.7	1.4	1.7
Trading profit	¥ billion	25.2	27.2	33.1	37.7	38.8	23.0	14.7
Operating profit	¥ billion	16.8	19.4	29.9	35.6	36.9	21.2	13.1
Architectural		17.0	24.6	27.0	26.2	25.8	17.3	15.7
Automotive		9.4	9.8	12.7	14.2	15.1	6.1	1.8
Technical Glass		4.9	0.3	1.8	5.4	8.1	7.1	6.7
Others		-14.5	-15.3	-11.6	-10.2	-12.1	-9.4	-11.1
Operating profit ratio to revenue	%	2.7%	3.1%	5.1%	5.9%	6.0%	3.8%	2.6%
Architectural		6.7%	9.4%	11.4%	11.0%	10.4%	7.4%	7.3%
Automotive		3.0%	3.1%	4.3%	4.6%	4.8%	2.2%	0.7%
Technical Glass		8.4%	0.5%	3.8%	11.2%	16.4%	17.7%	18.2%
Exceptional items	¥ billion	5.5	-35.1	2.9	-1.3	-7.1	-24.0	-21.4
Finance expenses (net)		-17.9	-18.2	-19.2	-14.6	-13.3	-11.8	-11.0
Share of JVs and associates		0.4	-3.4	1.1	2.4	6.2	1.1	2.1
Income before income taxes/Profit before taxation		4.8	-37.4	14.8	22.1	22.7	-13.5	-17.2
Net income/Profit attributable to owners of the parent		1.7	-49.8	5.6	6.2	13.3	-18.9	-16.9

Operating profit : operating profit after amortization of non-tangible assets

Financial Data (2)

		15/3	16/3	17/3	18/3	19/3	20/3	21/3
Assets	¥ billion	920.1	812.1	790.2	788.6	761.9	765.2	825.0
Interest-bearing debt		442.7	437.0	399.4	372.7	371.5	435.0	471.7
Shareholders' equity		175.7	103.1	124.1	135.2	123.8	73.6	62.9
Called up share capital		116.4	116.4	116.5	116.5	116.5	116.6	116.6
Net debt		374.1	381.0	313.3	306.5	317.7	390.2	411.8
EBITDA		57.8	60.3	62.1	63.6	64.7	55.0	46.8
Net debt/EBITDA		6.5x	6.3x	5.0x	4.8x	4.9x	7.1X	8.8X
Net debt/Equity ratio		2.0x	3.4x	2.3x	2.1x	2.4x	4.4X	5.2X
Shareholders' equity ratio	%	19.1%	12.7%	15.7%	17.1%	16.2%	9.6%	7.6%
Trading profit ratio	%	4.0%	4.3%	5.7%	6.3%	6.3%	4.1%	3.0%
Net cash flows from operating activities	¥ billion	24.6	21.8	30.4	34.7	29.0	30.4	21.1
Net cash flows from investing activities		-23.2	-26.4	-10.2	-17.9	-28.1	-56.9	-25.6
Cash flow before financing activities		1.4	-4.6	20.3	16.8	0.9	-26.4	-4.5
Capital expenditures		36.6	28.2	28.0	30.6	32.2	67.0	43.3
R&D costs		8.2	9.8	8.5	9.1	9.4	9.0	8.3
Depreciation and amortization		41.7	40.9	32.2	29.4	27.9	34.8	35.8

Financial Data (3) – Exchange rate trend -

Average rates used

	15/3	16/3	17/3	18/3	19/3	20/3	21/3
GBP	177	181	142	147	146	138	139
EUR	139	132	119	130	129	121	124
USD	110	120	108	111	111	109	106
BRR	44.5	33.5	32.8	34.4	29.4	26.4	19.7
ARS	13.10	11.35	7.22	6.30	-	-	-

Closing rates used

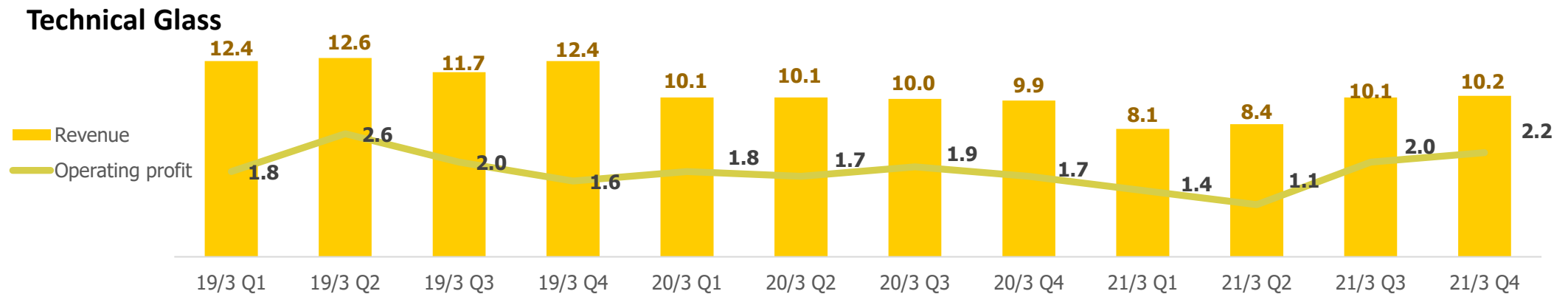
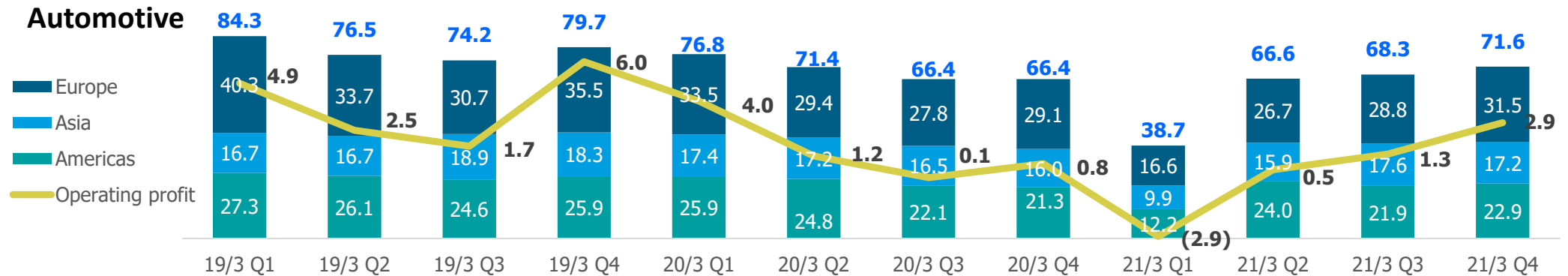
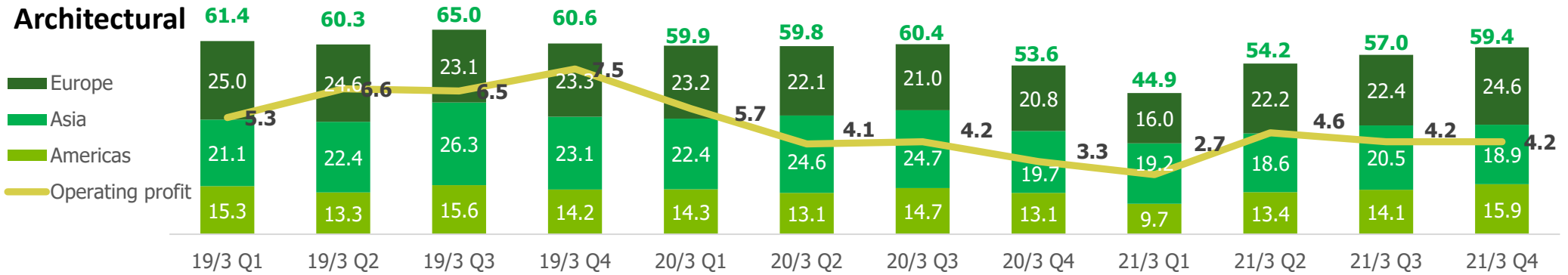
	15/3	16/3	17/3	18/3	19/3	20/3	21/3
GBP	178	161	139	150	144	133	152
EUR	130	127	119	132	124	119	130
USD	120	113	111	106	111	108	111
BRR	37.3	31.3	35.5	32.1	28.3	20.8	19.1
ARS	13.66	7.69	7.24	5.30	2.53	1.68	1.20

FX Sensitivity

Increase (decrease) if the value of the yen increases by 1%
(all other things being equal):

	20/3	21/3
Equity	JPY (3.1) billion	JPY (3.1) billion
Loss for the period	Improve by JPY 0.1 billion	Improve by JPY 0.1 billion

Revenue & Trading Profit – Quarterly Trend



NSG

GROUP