Introduction to NSG

March 2019

Nippon Sheet Glass Co Ltd
TSE Code: 5202

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Updated March 2019 | Introduction to NSG
I. NSG Group Today
NSG Group Today

One of the world’s largest manufacturers of glass and glazing products

- Supplying Architectural and Automotive glass globally and promoting shift to higher added value
- Leading supplier of Technical Glass products including thin display glass, lenses for printers and scanners, specialty glass fiber products*1

Principal operations in approximately 30 countries around the world, with sales in over 100 countries

28 float lines worldwide*2 *3

Approximately 27,000 employees globally

Reference: Consolidated Revenue : JPY603.9bn (FY2018)

*1: Refer to slide 29 for Technical Glass products
*2: Refer to slide 49 for Float process
*3: Refer to slide 55 for the number of Float lines
<table>
<thead>
<tr>
<th><strong>1918 - 1940s</strong></th>
<th><strong>Foundation &amp; Expansion</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1918:</td>
<td>America Japan Sheet Glass Co Ltd established in Osaka</td>
</tr>
<tr>
<td>1931:</td>
<td>Company name changed to Nippon Sheet Glass Co Ltd</td>
</tr>
<tr>
<td>1935:</td>
<td>Yokkaichi site opened</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>1950s - 1960s</strong></th>
<th><strong>Capacity Expansion and Start of Automotive Glass</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1950:</td>
<td>Listing on stock exchanges in Japan</td>
</tr>
<tr>
<td>1951:</td>
<td>Maizuru site opened</td>
</tr>
<tr>
<td>1963:</td>
<td>Chiba site opened</td>
</tr>
<tr>
<td>1965:</td>
<td>First float glass production in Asia at Maizuru site</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>1970s - 1990s</strong></th>
<th><strong>Overseas Expansion &amp; Diversification</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1971:</td>
<td>First overseas investment made in Malaysia</td>
</tr>
<tr>
<td>1978:</td>
<td>Ultra Fine Float™ production started</td>
</tr>
<tr>
<td>1979:</td>
<td>Glass fiber business launched</td>
</tr>
<tr>
<td>1995:</td>
<td>Overseas investment expanded including China and Vietnam</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>2000s</strong></th>
<th><strong>Acquisition of Pilkington &amp; Globalization</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2004:</td>
<td>Headquarters moved from Osaka to Tokyo</td>
</tr>
<tr>
<td>2006:</td>
<td>Acquisition of Pilkington, becoming global leader in flat glass</td>
</tr>
<tr>
<td>2007:</td>
<td>“Company with committees” governance adopted</td>
</tr>
<tr>
<td>2011:</td>
<td>IFRS adoption</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>For Growth</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>May 2014: Announcement of Long-term Strategic Vision and Medium-term Plan</td>
</tr>
<tr>
<td>Apr 2017: Medium-term Plan (MTP) Phase 2 started</td>
</tr>
<tr>
<td>Nov 2018: Announcement of “Our Vision”</td>
</tr>
</tbody>
</table>
Management Principles — “Our Vision” announced in November 2018

- From a glass company to ‘Glass and more’ company to create more value
- A team consisting of motivated individuals, leveraging its diversity, to achieve the shared goals

**MISSION**
Changing our surroundings, improving our world

**ASPIRATION**
Through innovation, becoming the most trusted partner in all industries we work in

**CORE VALUES**
- Respect others and unleash their potential
- Exemplify trust and integrity
- Ensure efforts to serve society
- Take the initiative
- Embrace challenges and learn from failure
- Follow through to get results
**Businesses**

**Architectural: 40%**
- Building glass & glazing
- Glass for solar panels

**Business:**
- 28 float lines operated globally
- Leading market position in each region
- Leading supplier for thin film solar panels

**Products:**
- Building glass & glazing
- Glass for solar panels

**Automotive: 52%**
- Glazing for new vehicles
- Glazing for replacement markets

**Businesses:**
- Key operations in 14 countries
- Supplying the world’s leading vehicle manufacturers
- Key player globally in automotive aftermarket (AGR) glazing distribution and wholesale

**Products:**
- Glazing for new vehicles
- Glazing for replacement markets

**Technical Glass: 8%**
- Thin glass for displays
- Lenses for printers and light guide
- Special glass fiber products such as battery separators, glass code for car engine timing belt, etc.

**Business**
- Key operations in Asia and Europe
- Unique ‘Number One’ and ‘Only One’ nisch products

**Products:**
- Thin glass for displays
- Lenses for printers and light guide
- Special glass fiber products such as battery separators, glass code for car engine timing belt, etc.

**Granroof at Tokyo Station**
**Photo: Toyota Motor Corporation**
**Super Glass Paper™**

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II. Long-term Strategic Vision & Medium-term Plan (MTP) Phase 2
Long-term Strategic Vision

Long-term Strategic Vision:

Transform into ‘VA Glass Company’

Strategic Intent
• Transform the whole Group structure into “VA-ready” while increasing the VA ratio in the Group’s sales

Objectives
• Consolidate our trusted reputation as a glass specialist
• Work closely with customers worldwide to offer unique value through our products and services
• Transform business structure from a traditional model to a value-added model

* VA: Value-added
Positioning of MTP Phase 2

Long-term Strategic Vision

MTP

- Achieve financial sustainability
- Transform into VA Glass Company

Four Key Measures

- Operational efficiency improvement
- Driving VA shift

Financial Stability

- Issuance of Class A Shares (2017/3/31)

After MTP

- Top-line growth based on financial sustainability

Restored profitability

Restructuring to restore profitability

Operational efficiency improvement
Driving VA shift

Drive VA No.1 Strategy
Establish growth drivers
Business culture innovation
Enhance global management

Phase 2
FY18-FY20

FY12-FY14
FY15-FY17
FY21-
Medium-term Plan (MTP) Phase 2 (FY2018-FY2020)

Phase 2 Measures

Growth Measures
- Drive VA No.1 Strategy
- Establish growth drivers
- Business culture innovation
- Enhance global management

Financial Measures
- Enhance equity
- Reduce net debt
- Issue Class A Shares

MTP Targets
- Financial sustainability
- Transform into VA Glass Company

Financial Targets
- Net debt / EBITDA: 3x
- ROS > 8%

[Expectation after achieving MTP Targets]
(After redemption of Class A Shares)
- Equity Ratio: 20%
- ROE: 10%
- VA Sales Ratio: > 50%
- Trading Profit: JPY50-60 bn

VA: Value-added  ROS (Return on Sales): based on trading profit (profit before amortization of non-tangible assets)

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MTP Phase 2: Four Key Measures for Growth

Drive VA No.1 Strategy
- Win leading position in the areas with “high growth potential” and “core strength”
- How:
  - Focus resources on VA shift in the areas where NSG technology and brand have the biggest advantage
  - Enhance customer relationship, build strategic alliance

Establish Growth Drivers
- Launch multiple, promising growth drivers
- Target areas:
  - Architectural Glass (energy-save/generation, health, design)
  - Automotive Glass (ADAS, connected, UV/IR shield, light-weight)
  - Technical Glass (new products/applications with proprietary technology)

Business Culture Innovation
- Build leaner business structure
- How:
  - Optimize all work processes
  - Enhance manufacturing excellence in each region
  - Optimize global R&D with customer viewpoints
  - Strengthen customer-oriented marketing

Enhance Global Management
- Advance global management to achieve the Group’s optimization
- How:
  - Drive talent development, promote diversity
  - Enhance faster decision-making with flexible organization management
  - Continue to reduce cost across the Group
MTP Phase 2: KPI Update

Steady improvement of KPIs toward financial sustainability

### MTP Targets

<table>
<thead>
<tr>
<th>KPI</th>
<th>FY2016</th>
<th>FY2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROS</td>
<td>4.3%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Net Debt/EBITDA</td>
<td>6.3x</td>
<td>5.0x</td>
</tr>
</tbody>
</table>

### MTP Phase 2

<table>
<thead>
<tr>
<th>KPI</th>
<th>FY2018</th>
<th>MTP P2 / after redemption</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROS</td>
<td>6.2%</td>
<td>&gt; 8%</td>
</tr>
<tr>
<td>Net Debt/EBITDA</td>
<td>4.6x</td>
<td>3x</td>
</tr>
</tbody>
</table>

### [Reference]

<table>
<thead>
<tr>
<th>KPI</th>
<th>FY2016</th>
<th>FY2017</th>
<th>(Expectation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity Ratio</td>
<td>12.7%</td>
<td>15.7%</td>
<td>17.0%</td>
</tr>
<tr>
<td>ROE</td>
<td>(35.7%)</td>
<td>4.9%</td>
<td>4.7%</td>
</tr>
<tr>
<td>VA Sales Ratio</td>
<td>35%</td>
<td>41%</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt; 50%</td>
</tr>
</tbody>
</table>
MTP Phase 2: Trading Profit & ROS

Trading profit
ROS

(JPY bn)

Global Financial Crisis
European Financial Crisis

FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15 FY16 FY17 FY18 FY19 Fcst

ROS (Return on Sales)
: based on trading profit (profit before amortization of non-tangible assets)

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MTP Phase 2: Steady Improvement in VA Sales Ratio

Before MTP 1/3

After MTP > 50%

FY2018/E 44%

Constantly evolving VA products
- New applications of online-coated glass
- Glass for autonomous driving and EV
- Glass & Beyond - Development into new areas

Architectural
- Online-coated glass, glass with high light transmission

Automotive
- Glass for HUD, ADAS, Super UV Cut

Technical
- Lenses, battery separators, glass cords

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III. Shift to ‘VA + Growth’
Actions are being taken based on different growth phases

**Profitability Enhancement**
- Profit improvement with VA shift
- Cost reduction with productivity improvement
- Review of underperforming businesses

**Top-line Expansion**
- Growth Investment in Emerging Markets (South America)
- Capacity expansion in thin-film solar panel glass
- New application development of online-coated glass
- Commercialization of new Technical Glass products

**New Business Development and Creation of Customer Value**
- Launch of Business Innovation Center
“VA + Growth” – Seeds for Next Growth

Focused actions in the areas the Group has strengths or growth potential such as advanced automotive windscreens, online coating, South America and Technical Glass products.

* APBL: Advanced Press Bending for Laminated

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Creating New Businesses in response to External Changes

**External changes**

- Actions against climate change
- Aging and decline of population in developed countries
- Population explosion in developing countries
- Proliferation of IoT
- Arrival of Smart Mobility Society
- Increasing need for safety, security and comfort

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**Top-line Growth**

Shift to “VA + Growth”

- **Technical**
- **Architectural**
- **Businesses**
- **Automotive**

- **VA Glass Company**
- **Building energy saving**
- **Energy generation, PV**
- **Connected devices**
- **Autonomous driving, EV**
- **Interactive displays**
- **Network infrastructure**

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Architectural Glass
Value creation based on energy saving & generation, health & safety, design & visibility

↑ Low e coated glass
(High transmission glass)

↑ Optiwhite™

↑ Conventional glass

↑ Glass for thin film Solar panels

↑ MirroView™
(High reflection glass)

↑ Spacia™
(Vacuum glazing)

↑ Electrochromic glass
(Photo: View Dynamic Glass)

↑ Optiwhite™ used for Midtown Hibiya in Tokyo

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Capacity Expansion in Emerging Market (South America)

Investing in new float line in Argentina, leveraging 80 years of business experience and solid market position in South America

Summary

- Facility: 2\(^{nd}\) float line for VASA * (capacity: 900 ton/day)
- Investment: USD200 m
- Site: Cardales (near Buenos Aires)
- Market: Argentina and neighboring countries
- Start up planned in first half of 2020

Growing South American Glass Demand

(Our estimate)

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* Vidrieria Argentina SA
NSG: 51%; Saint-Gobain: 49%
Expanding production facilities of growing Thin-film Solar Glass

- A total of 38 billion yen will be invested by the fiscal year ending March 2021
- Added 2 float lines with online coater
  - Renovation and restart of a float in Vietnam
  - New float line installed in North America

Med- and long-term growth

- Solar panel demand is growing in the medium to long term despite policy change in China affecting global demand in 2018/19

*Thin-film Solar Glass: Refer to slide 53
## Growth of Online-coated Products

<table>
<thead>
<tr>
<th>Function</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductivity</td>
<td>Heating glass</td>
</tr>
<tr>
<td></td>
<td>Transparent conductive film for touch panels</td>
</tr>
<tr>
<td></td>
<td>Transparent conductive film for thin film solar panels</td>
</tr>
<tr>
<td>Infrared reflection</td>
<td>Heat insulation glass</td>
</tr>
<tr>
<td></td>
<td>Heat blocking glass</td>
</tr>
<tr>
<td></td>
<td>Low e glass</td>
</tr>
</tbody>
</table>

### NSG Online Coaters

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Automotive application (Low e glass)

Super thin NSG TEC™
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: All new standard houses
- 2030: Net zero of total new houses

USA
- 2030: All new commercial buildings
- 2050: All commercial buildings

EU
- 2018: All new public buildings
- 2020: All new buildings

UK
- 2016: All new houses
- 2018: All new public facilities
- 2019: Zero carbonization for all commercial buildings

BIPV (Building Integrated Photovoltaics)
Spacia™ (Vacuum glazing)
Automotive Glass
Value creation along with advanced automotive technologies (OE/AGR) *

* OE: Original Equipment  AGR: Automotive Glass Replacement

Photo on bottom right: Licensed by Mazda
WS: Windshield; ISS: Idling stop & start; SL: Side light
ADAS: Advanced driving assistance system
Respond to automotive innovation
Expanding press equipment for high precision windshields manufacturing globally

- With the advancement of automotive technology such as ADAS and HUD, highly accurate front glass molding that needs increase
- Developed in house, and started production in Germany in 1995, ahead of competitors

Installation of APBL

- Germany 1995
- Poland 2013
- Japan 2005 & 2017
- United States 2015 & 2017
- Italy 2017
High precision glass required for ADAS · HUD

Accelerating glass demand for ADAS (Advanced Driver Assistance System)
- Many of ADAS features rely on cameras mounted to windshields
- High precision windshields required for proper sensing (OE and AGR)

High precision windshields also required for HUD (Head Up Display)
- Adopted for LEXUS LS windshield with a largest HUD and a pickup truck of GM (GMC Sierra)

Courts of TOYOTA Global Newsroom
Value of AGR business

Working from wholesale to retail business, providing value to our customers

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

ADAS calibration
- Impact of ADAS enabled us to offer new services

- Opportunity:
  ADAS systems often require calibration of the cameras after windshield replacement

- Our Business
  - Opti-Aim™ developed to support our customers in the US
  - Training services for ADAS calibration are offered in South America
Technical Glass
Unique products and new business opportunities

↑ Super Glass Paper

↑ METASHINE™

↑ Glass cord

↑ GLASSFLAKE

← Battery separators
(Left : PE separator)
(Right : AGM separator)

↑ SELFOC ® Lens Array
Battery Separator Business Development with Strategic Alliance

Expand supply for catering to growing lead-acid batteries, including ISS batteries.

Aim for a world leading supplier, leveraging on technological, commercial and manufacturing strengths.

New site location: Production started in FY19Q4

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New Business Development and Creation of Customer Value

Business Innovation Center (BIC) Established in July 2018

- An organization tasked to lead the Group’s growth strategy, in developing new businesses customized for needs of different regions and markets
- External talent, Satoshi Ishino, Chief Development Officer, brought in to lead the organization, with the relevant new business experience to provide stimulus and a fresh
- To improve innovation and customer orientation throughout the Group
New Product Opportunities

Proliferation of IoT and Arrival of Smart Mobility Society

- Opportunities in growth of key technologies such as network infrastructure and connected devices

- Smart cities (Cities, houses, infrastructure)

- Healthcare (Wearable devices, medicine)

- Smart Factories (AI, robots)

- Connected cars (Autonomous driving, EVs)

New Products

- Information Devices
  - Displays
  - Separators
  - Functional Glass Cords

Through Glass Via (TGV)

Super Glass Paper

Mobile DNA Testing Equipment

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IV. ESG* for Creating Value

Materiality for NSG Group

Outcome of materiality assessment

- Employee Labour conditions and Human rights
- Employee safety
- Energy use & GHG emissions
- VA products & services
- Supply chain risk
- Landfill waste
- Employee retention
- Anti corruption and competitive behaviour

* ESG: Environment, Social, Governance

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## Sustainability Targets & Progress

Quantitative targets and KPIs set based on identified materiality

<table>
<thead>
<tr>
<th></th>
<th>FY17/18 Progress</th>
<th>FY20 Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety</td>
<td>• 6% yoy improvement in FY18 with no fatalities</td>
<td>• Reduce Significant Injury Rate by 10% with no fatalities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste</td>
<td>• Exceeded target in FY18 with 10kt (33%) reduction</td>
<td>• Reduce waste to landfill by 12kt (40% reduction vs FY14)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy &amp; CO2 reduction</td>
<td>• Achieved 1% reduction</td>
<td>• 1% yoy reduction in Co2 intensity across glass manufacturing operation</td>
</tr>
<tr>
<td>Sustainable VA products</td>
<td>• 44% in FY18</td>
<td>• Increase VA sales ratio to &gt;50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Demonstrate environmental and social benefit of products</td>
</tr>
<tr>
<td>Responsible sourcing &amp; transport</td>
<td>• 65% of key suppliers have agreed to SCoC etc.</td>
<td>• 10% yoy increase in Supplier Code of Conduct acceptance by key suppliers etc.</td>
</tr>
<tr>
<td>Employees</td>
<td>• Overall engagement score increased by 4%</td>
<td>• Improve NSG engagement score by 5pts etc.</td>
</tr>
<tr>
<td></td>
<td>• 279 action plans created and 84% are on track</td>
<td>• Increase inclusion &amp; diversity awareness by training managers</td>
</tr>
<tr>
<td>Ethics &amp; compliance</td>
<td>• The online code training was completed</td>
<td>• Review, develop and enhance Ethics and Compliance educational modules, resources and overall culture, etc.</td>
</tr>
<tr>
<td></td>
<td>• Completed hotline communication</td>
<td></td>
</tr>
</tbody>
</table>
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 based on nomination process

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

Board Effectiveness Evaluation

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

1) Deeper discussion on strategic direction including ESG; and
2) More robust risk management
Corporate Governance
– The Board & Committees all chaired by Independent External Director

General Meeting of Shareholders

Election / Dismissal

Director Nomination

Nomination Committee
Chaired by Masatoshi Matsuzaki
(Former CEO of Konica Minolta)

Audit Committee
Chaired by Toshikuni Yamazaki
(Former Executive Vice President Finance, JFE Holdings)

Compensation Committee
Chaired by Yasuyuki Kimoto
(Former Chairman of Olympus)

Board of Directors
Chaired by Günter Zorn
(Former Executive Vice President North Pacific, DHL)

Executive Officers
Led by Shigeki Mori
President & CEO

Appointment / Dismissal

Supervision

Executive Officer Nomination

Audit

Compensation Determination

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Introduction to NSG
Board of Directors – Robust corporate governance with four Independent External Directors

Günter Zorn
External Director
Chairman of the Board

Toshikuni Yamazaki
External Director

Yasuyuki Kimoto
External Director

Masatoshi Matsuzaki
External Director

Yuji Takei
External Director

Shigeki Mori
Director
President
Chief Executive Officer

Clemens Miller
Director
Executive Vice President
Chief Operating Officer

Kenichi Morooka
Director
Executive Vice President
Chief Financial Officer

Nomination Committee: Masatoshi Matsuzaki (Chairperson)
Günter Zorn; Toshikuni Yamazaki; Yasuyuki Kimoto; and Shigeki Mori

Audit Committee: Toshikuni Yamazaki (Chairperson)
Günter Zorn; Yasuyuki Kimoto; and Masatoshi Matsuzaki

Compensation Committee: Yasuyuki Kimoto (Chairperson)
Günter Zorn; Toshikuni Yamazaki; Masatoshi Matsuzaki; and Shigeki Mori

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Executive Officers
– International management team

Shigeki Mori
President and Chief Executive Officer (CEO)

Clemens Miller
Executive Vice President and Chief Operating Officer (COO)

Kenichi Morooka
Executive Vice President and Chief Financial Officer (CFO)

Jochen Settelmayer
Head of Architectural Glass

Tony Fradgley
Head of Automotive AGR and Head of Automotive OE

Phil Wilkinson
Chief Information Officer and Global Head of Automotive AGR

Hiroshi Nishikawa
Head of Technical Glass

Yutaka Nakashima
Chief Human Resources Officer

Koichi Hiyoshi
Chief Legal Officer and Company Secretary

Satoshi Ishino
Chief Development Officer Head of Business Innovation Centre

Hiroshi Kishimoto
Chief Risk Officer (CRO)

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Environment: Reducing CO2 Emission

For reducing CO2 emission

- One percent year on year reductions in CO2 across glass manufacturing operations
- Supplying low e and other energy saving products, contributing to the reduction of greenhouse gas emissions and mitigation of the effects of climate change

FY2018/2019 Actions

- Science based targets (SBT) for greenhouse gas reduction:
  Committed in August 2018; targets being developed
- Shift to renewable energy

Green Energy
In Europe, contract in place to switch 50 percent of electricity to green energy

Solar Energy
Planning to install PV panels at Lathom (UK), Northwood (US) and other Group sites

*ESG: Environment, Social and Governance
Social

Employees
• Global and regional talent development programs and succession planning
• Leadership development programs to identify and develop talent pool
• Competency model to define expectations for Group employees
• Promotion of inclusion & diversity

Supply Chain
• Based on “Supplier Code of Conduct” issued in 2009, more than 350 suppliers audited by FY2018 for its compliance, with coverage increasing 20 percent p.a.

Ethics and Compliance
• Rolling out “Code of Ethics” and maintaining 100% annual training completion
• Communications on Ethics & Compliance Hotline and encouraging reporting

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 JPY1,610 million for 1,237 projects cumulatively.
NSG Integrated Report Published


NSG Group Integrated Reports (Annual Reports)

Integrated Report 2018 [PDF 4.55MB/46Pages]
Sustainability Data Book 2018 [PDF 1.44MB/21Pages]
Annual Consolidated Financial Statements 2018 [PDF 1.40MB/70Pages]
V. Capital Allocation
Redemption of Class A Shares Started (Acquisition & Cancellation)

Considering the continued improvement in net profitability, the Group started to redeem a portion of its Class A shares from December 2018

Number of shares has been acquired and cancelled: 5,000
Amount: JPY5,800m including JPY750m premium and JPY50m dividends
Date of acquisition and cancellation: 7 December 2018
Number of outstanding shares after redemption:
35,000 (Issued value: JPY35,000m)

Redemption Policy:
• The Group’s policy is to redeem Class A Shares at the earliest possible timing, considering net profit and preferred and ordinary dividends, while maintaining financial stability.
• By reducing the outstanding shares, the amount of preferred dividends and redemption premium is to be reduced.
Dividend Policy

The Group’s dividend policy is to secure dividend payments based on sustainable business results.

Once Class A Shares redeemed, the Group aims to maintain a consolidated dividend payout ratio of 30 percent.

**Based on the Group’s performance recovery, it decided to resume ordinary dividend payment**

<table>
<thead>
<tr>
<th></th>
<th>FY2018 (year-end)</th>
<th>FY2019 (Q2 *)</th>
<th>FY2019 (Q4 forecast)</th>
<th>FY2019 Total forecast</th>
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</thead>
<tbody>
<tr>
<td>Ordinary (JPY/share)</td>
<td>20</td>
<td>-</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Commemoration (JPY/share)</td>
<td>-</td>
<td>10</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>Total Ordinary Dividend</td>
<td>20</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Dividend Amount (JPY bn)</td>
<td>3.6</td>
<td>2.0</td>
<td>2.8</td>
<td>4.8</td>
</tr>
<tr>
<td>(Ordinary Dividends)</td>
<td>(1.8)</td>
<td>(0.9)</td>
<td>(1.8)</td>
<td>(2.7)</td>
</tr>
<tr>
<td>(Preferred Dividends)</td>
<td>(1.8)</td>
<td>(1.1)</td>
<td>(1.0)</td>
<td>(2.1)</td>
</tr>
<tr>
<td>Consolidated Payout Ratio (Ordinary)</td>
<td>42%</td>
<td></td>
<td>23%</td>
<td></td>
</tr>
</tbody>
</table>

* Centennial commemoration dividend
“VA+Growth”
– Financial Sustainability

Mid- to long-term policy to improve financial sustainability remains unchanged; Allocation of increased profit to be balanced among financial improvement, growth and return to shareholders.

- Operating Profit
- Net Profit
- Free Cash Flow

Redeem Class A share (Pref dividend & premium reduction)
Reduce Debt (Finance expense reduction)

Shareholders’ Equity
Shareholders’ Value
Credit Ratings

Invest in Growth Opportunities
Make Return to Shareholders

Toward Further Growth

Updated March 2019 | Introduction to NSG
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
VI. Appendix
1. Manufacturing Process
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

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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 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

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2. Operational Footprint
Global Float Operations

UK 1
1 St Helens

Poland 1
1 Sandomierz

USA 6
2 Rossford
1 Ottawa
2 Laurinburg
1 Troy (to be constructed)

Germany 4
2 Gladbeck
2 Weiherhammer

Italy 3
2 San Salvo
1 Venice

Brazil 2
1 Caçapava
1 Barra Velha

Malaysia 2
2 MSG (Johore Bahru)

Argentina 1
1 Liavaliol

Chile 1
1 Concepcion

Japan 4
2 Chiba
2 Maizuru

Vietnam 3
1 VFG (Bac Ninh)
1 VGI (Ba Ria Vung Tau)
1 VGI (to be constructed)

Operated by NSG Group 28

Updated March 2019

Introduction to NSG
4. Financial Data
### Financial Data (1)

<table>
<thead>
<tr>
<th></th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
<th>FY17</th>
<th>FY18</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td>¥ billion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architectural</td>
<td>240.6</td>
<td>252.9</td>
<td>262.6</td>
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<tr>
<td>Automotive</td>
<td>305.1</td>
<td>314.0</td>
<td>316.3</td>
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<tr>
<td>Technical Glass</td>
<td>59.4</td>
<td>58.7</td>
<td>49.5</td>
<td>46.1</td>
<td>48.4</td>
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<tr>
<td>Others</td>
<td>1.0</td>
<td>1.1</td>
<td>0.8</td>
<td>0.4</td>
<td>1.1</td>
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<tr>
<td><strong>Trading profit</strong></td>
<td>¥ billion</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architectural</td>
<td>11.0</td>
<td>17.0</td>
<td>24.6</td>
<td>27.0</td>
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<tr>
<td>Automotive</td>
<td>11.2</td>
<td>9.4</td>
<td>9.8</td>
<td>12.7</td>
<td>14.3</td>
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<tr>
<td>Technical Glass</td>
<td>5.9</td>
<td>4.9</td>
<td>0.3</td>
<td>1.8</td>
<td>5.4</td>
</tr>
<tr>
<td>Others</td>
<td>-5.6</td>
<td>-6.0</td>
<td>-7.5</td>
<td>-8.4</td>
<td>-8.2</td>
</tr>
<tr>
<td><strong>Operating profit ratio to revenue</strong></td>
<td>%</td>
<td>2.4%</td>
<td>2.7%</td>
<td>3.1%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Architectural</td>
<td>4.6%</td>
<td>6.7%</td>
<td>9.4%</td>
<td>11.4%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Automotive</td>
<td>3.7%</td>
<td>3.0%</td>
<td>3.1%</td>
<td>4.3%</td>
<td>4.6%</td>
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<tr>
<td>Technical Glass</td>
<td>9.9%</td>
<td>8.4%</td>
<td>0.5%</td>
<td>3.8%</td>
<td>11.1%</td>
</tr>
<tr>
<td><strong>Exceptional items</strong></td>
<td>¥ billion</td>
<td>-13.8</td>
<td>5.5</td>
<td>-35.1</td>
<td>2.9</td>
</tr>
<tr>
<td>Finance expenses (net)</td>
<td>¥ billion</td>
<td>-16.9</td>
<td>-17.9</td>
<td>-18.2</td>
<td>-19.2</td>
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<tr>
<td>Share of JVs and associates</td>
<td>¥ billion</td>
<td>1.0</td>
<td>0.4</td>
<td>-3.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Income before income taxes/Profit before taxation</td>
<td>¥ billion</td>
<td>-15.1</td>
<td>4.8</td>
<td>-37.4</td>
<td>14.8</td>
</tr>
<tr>
<td>Net income/Profit attributable to owners of the parent</td>
<td>¥ billion</td>
<td>-16.6</td>
<td>1.7</td>
<td>-49.8</td>
<td>5.6</td>
</tr>
</tbody>
</table>

Note: Early IFRS adaption since FY2011
## Financial Data (2)

<table>
<thead>
<tr>
<th></th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
<th>FY17</th>
<th>FY18</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td>¥ billion</td>
<td>926.2</td>
<td>920.1</td>
<td>812.1</td>
<td>790.2</td>
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<tr>
<td>Interest-bearing debt</td>
<td>¥ billion</td>
<td>455.3</td>
<td>442.7</td>
<td>437.0</td>
<td>399.4</td>
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<tr>
<td>Shareholders’ equity</td>
<td>¥ billion</td>
<td>184.0</td>
<td>175.7</td>
<td>103.1</td>
<td>124.1</td>
</tr>
<tr>
<td>Called up share capital</td>
<td>¥ billion</td>
<td>116.4</td>
<td>116.4</td>
<td>116.4</td>
<td>116.5</td>
</tr>
<tr>
<td>Net debt</td>
<td>¥ billion</td>
<td>379.1</td>
<td>374.1</td>
<td>381.0</td>
<td>313.3</td>
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<tr>
<td>EBITDA</td>
<td>¥ billion</td>
<td>54.4</td>
<td>57.8</td>
<td>60.3</td>
<td>62.1</td>
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<tr>
<td>Net debt/EBITDA</td>
<td>7.0x</td>
<td>6.5x</td>
<td>6.3x</td>
<td>5.0x</td>
<td>4.6x</td>
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<tr>
<td>Net debt/Equity ratio</td>
<td>2.0x</td>
<td>2.0x</td>
<td>3.4x</td>
<td>2.3x</td>
<td>2.2x</td>
</tr>
<tr>
<td>Shareholders’ equity ratio</td>
<td>%</td>
<td>19.9%</td>
<td>19.1%</td>
<td>12.7%</td>
<td>15.7%</td>
</tr>
<tr>
<td>Trading profit ratio</td>
<td>%</td>
<td>3.7%</td>
<td>4.0%</td>
<td>4.3%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Net cash flows from operating activities</td>
<td>¥ billion</td>
<td>17.9</td>
<td>24.6</td>
<td>21.8</td>
<td>30.4</td>
</tr>
<tr>
<td>Net cash flows from investing activities</td>
<td>¥ billion</td>
<td>-17.1</td>
<td>-23.2</td>
<td>-26.4</td>
<td>-10.2</td>
</tr>
<tr>
<td>Cash flow before financing activities</td>
<td>¥ billion</td>
<td>0.8</td>
<td>1.4</td>
<td>-4.6</td>
<td>20.3</td>
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<tr>
<td>Capital expenditures</td>
<td>¥ billion</td>
<td>31.6</td>
<td>36.6</td>
<td>28.2</td>
<td>28.0</td>
</tr>
<tr>
<td>R&amp;D costs</td>
<td>¥ billion</td>
<td>7.9</td>
<td>8.2</td>
<td>9.8</td>
<td>8.5</td>
</tr>
<tr>
<td>Depreciation and amortization</td>
<td>¥ billion</td>
<td>40.4</td>
<td>41.7</td>
<td>40.9</td>
<td>32.2</td>
</tr>
</tbody>
</table>

### Notes:
- **Numbers of shares of common stock***1**: 903,551, 903,551, 903,551, 90,366, 90,487
- **Earnings per share***1**: ¥ -18.4, 1.9, -55.2, 62.0, 47.9
- **Book value per share***1**: ¥ 203.78, 194.6, 114.14, 941.76, 1033.24
- **Cash dividends Yen***1**: ¥ 0, 0, 0, 0, 20
- **Stock price (High)**: ¥ 154, 149, 142, 951, 1080
- **Stock price (Low)**: ¥ 90, 94, 64, 600, 743

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

**Note:** Early IFRS adaption since FY2011

Updated March 2019 | Introduction to NSG
## Financial Data (3)
### - Exchange rate trend -

### Average rates used

<table>
<thead>
<tr>
<th></th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
<th>FY17</th>
<th>FY18</th>
</tr>
</thead>
<tbody>
<tr>
<td>GBP</td>
<td>159</td>
<td>177</td>
<td>181</td>
<td>142</td>
<td>147</td>
</tr>
<tr>
<td>EUR</td>
<td>134</td>
<td>139</td>
<td>132</td>
<td>119</td>
<td>130</td>
</tr>
<tr>
<td>USD</td>
<td>100</td>
<td>110</td>
<td>120</td>
<td>108</td>
<td>111</td>
</tr>
<tr>
<td>BRR</td>
<td>44.4</td>
<td>44.5</td>
<td>33.5</td>
<td>32.8</td>
<td>34.4</td>
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<tr>
<td>ARS</td>
<td>16.27</td>
<td>13.10</td>
<td>11.35</td>
<td>7.22</td>
<td>6.30</td>
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### Closing rates used

<table>
<thead>
<tr>
<th></th>
<th>FY14</th>
<th>FY15</th>
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<th>FY17</th>
<th>FY18</th>
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</thead>
<tbody>
<tr>
<td>GBP</td>
<td>171</td>
<td>178</td>
<td>161</td>
<td>139</td>
<td>150</td>
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<tr>
<td>EUR</td>
<td>141</td>
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<td>127</td>
<td>119</td>
<td>132</td>
</tr>
<tr>
<td>USD</td>
<td>103</td>
<td>120</td>
<td>113</td>
<td>111</td>
<td>106</td>
</tr>
<tr>
<td>BRR</td>
<td>45.5</td>
<td>37.3</td>
<td>31.3</td>
<td>35.5</td>
<td>32.1</td>
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<tr>
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<td>13.66</td>
<td>7.69</td>
<td>7.24</td>
<td>5.30</td>
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## Financial Data (3)
### - Exchange rate trend -

#### Average rates used

<table>
<thead>
<tr>
<th></th>
<th>FY17</th>
<th>FY18</th>
<th>FY19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q4</td>
<td>Q1</td>
<td>Q2</td>
</tr>
<tr>
<td>GBP</td>
<td>142</td>
<td>142</td>
<td>144</td>
</tr>
<tr>
<td>EUR</td>
<td>119</td>
<td>122</td>
<td>126</td>
</tr>
<tr>
<td>USD</td>
<td>108</td>
<td>111</td>
<td>112</td>
</tr>
<tr>
<td>BRR</td>
<td>32.8</td>
<td>34.6</td>
<td>35.0</td>
</tr>
<tr>
<td>ARS</td>
<td>7.22</td>
<td>7.06</td>
<td>6.74</td>
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#### Closing rates used

<table>
<thead>
<tr>
<th></th>
<th>FY17</th>
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<th>FY19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q4</td>
<td>Q1</td>
<td>Q2</td>
</tr>
<tr>
<td>GBP</td>
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<td>128</td>
<td>132</td>
</tr>
<tr>
<td>USD</td>
<td>111</td>
<td>112</td>
<td>113</td>
</tr>
<tr>
<td>BRR</td>
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<td>34.0</td>
<td>35.4</td>
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<tr>
<td>ARS</td>
<td>7.24</td>
<td>6.81</td>
<td>6.42</td>
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</tbody>
</table>
5. Class A Shares Detail
### Class A Shares Detail

<table>
<thead>
<tr>
<th>Amount (No of Shares)</th>
<th>JPY40 billion (40,000 shares)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned Allottees (Amount &amp; No of shares)</td>
<td></td>
</tr>
<tr>
<td>Japan Industrial Solutions Fund II</td>
<td>JPY20 billion (20,000 shares)</td>
</tr>
<tr>
<td>UDS III Corporate Mezzanine Limited Partnership</td>
<td>JPY10 billion (9,000 shares)</td>
</tr>
<tr>
<td>UDS IV Corporate Mezzanine Limited Partnership</td>
<td>JPY10 billion (11,000 shares)</td>
</tr>
<tr>
<td>Voting Rights</td>
<td>None</td>
</tr>
<tr>
<td>Preferred dividend rate (Cumulative)</td>
<td></td>
</tr>
<tr>
<td>31 March 2017 ~ 31 March 2018</td>
<td>4.5%</td>
</tr>
<tr>
<td>1 April 2018 ~ 31 March 2020</td>
<td>5.5%</td>
</tr>
<tr>
<td>1 April 2020 ~</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Call option (Company’s option)</th>
<th>Consideration</th>
<th>Redemption</th>
<th>Paying-in amount per share + cumulative accrued dividend amount + daily prorated accrued preferred dividend amount + redemption premium</th>
</tr>
</thead>
</table>
| Redemption Amount per share   | Cash          | 1 April 2018 or later | <Redemption premium>
|                               |               |                          | 1 April 2018 ~ 30 June 2018  : 1.08 |
|                               |               |                          | 1 July 2018 ~ 30 June 2019  : 1.15 |
|                               |               |                          | 1 July 2019 ~ 30 June 2020  : 1.22 |
|                               |               |                          | 1 July 2020 ~ 30 June 2021  : 1.29 |
|                               |               |                          | 1 July 2021 ~ 30 June 2022  : 1.36 |
|                               |               |                          | 1 July 2022 ~              : 1.43 |
| Put option (Planned Allottees’ option) | No. of Ordinary Shares to be Issued per Class A Share | (Paying-in amount per share X ordinary share redemption premium) / acquisition price |
|                               |               |                          | <Ordinary share redemption premium>
|                               |               |                          | 1 April 2017 ~ 30 June 2017  : 1.05 |
|                               |               |                          | 1 July 2017 ~ 30 June 2018  : 1.08 |
|                               |               |                          | 1 July 2018 ~ 30 June 2019  : 1.15 |
|                               |               |                          | 1 July 2019 ~ 30 June 2020  : 1.22 |
|                               |               |                          | 1 July 2020 ~ 30 June 2021  : 1.29 |
|                               |               |                          | 1 July 2021 ~ 30 June 2022  : 1.36 |
|                               |               |                          | 1 July 2022 ~              : 1.43 |

**Design**
- In principle, the Planned Allottees may not exercise their put option before 1 July 2020.
- 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.