

**ENVIRONMENTAL AND SOCIAL REVIEW SUMMARY (ESRS)**  
**PROJECT: Pilkington IV #38822**

*Disclaimer*

*This Environmental and Social Review Summary (ESRS) is prepared and distributed in advance of the IFC Board of Directors' consideration of the proposed transaction. Its purpose is to enhance the transparency of IFC's activities, and this document should not be construed as presuming the outcome of the Board of Director's decision. Board dates are estimates only. Any documentation which is attached to this ESRS has been prepared by the project sponsor and authorization has been given for public release. IFC has reviewed this documentation and considers that it is of adequate quality to be released to the public but does not endorse the content.<sup>1</sup>*

**Project Description:**

Founded in 1918, Nippon Sheet Glass Co. Ltd. (the “NSG Group” or the “Sponsor” - <http://www.nsg.com/en/about-nsg>) is one of the world's leading manufacturers of glass and glazing systems in three business areas: Architectural; Automotive; and Technical Glass.

NSG Group acquired the leading UK-based glass manufacturer Pilkington plc in June 2006, which is now known as NSG UK Enterprises Limited (“NSG/Pilkington”, the “Company” or the “Borrower”) and is a wholly owned subsidiary involved in manufacturing of architectural and automotive glass products. The Company’s operations span across Europe, North and South America.

IFC’s engagement with Pilkington started in the 1990s. IFC financing was provided to Pilkington’s projects in Poland and Russia. The public disclosure documents for the Pilkington Russia projects can be found here:

- Project #11660: OOO Pilkington Glass Russia disclosed on Sep 15, 2003 <https://disclosures.ifc.org/#/projectDetailERS/3256> and
- Project #25154: Pilkington RuII disclosed on Jun 16, 2006 - <https://disclosures.ifc.org/#/projectDetailSPI/8589>

The proposed project entails the investment program of NSG UK Enterprises over the next two years, and ranges from investments in manufacturing new glass models for the automotive industry to ongoing maintenance of float glass lines and investments in research and development.

Specifically, the IFC loan is expected to be utilized for: (i) partial financing of the Company’s FY16-18 capex in Poland; (ii) funding research and development (R&D) expenses geared towards improving energy efficiency of the manufacturing processes so as to produce more climate friendly products which is primarily performed in UK and new products and processes are rolled out across all NSG/Pilkington operations in emerging and developed markets; and (iii) refinancing of high priced debt.

**Overview of IFC’s Scope of Review:**

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<sup>1</sup> Sentences in italics are standard language and cannot be modified.

This is a corporate investment which will, in turn, support several capex activities across various facilities of the Company (primarily in Poland); comprising of upgrading of NSG/Pilkington's existing facilities, and supporting research and development programs, with focus on energy savings. Therefore, according to the Environmental and Social (E&S) review procedures for such corporate investments, the E&S appraisal focused on evaluating the NSG Group's corporate policies and principles and operational practices vis-à-vis the IFC Performance Standards and World Bank Group Environmental, Health, and Safety Guidelines for Glass Manufacturing and Environmental, Health, and Safety General Guidelines.

As such, the appraisal included review of NSG Group's corporate E&S management systems (ESMS) policies and procedures and supporting documents such as standard operational procedures, work instructions, organization charts, environmental and safety monitoring records and sustainability reports for NSG Group (<http://www.nsg.com/en/sustainability/oursustainabilityagenda>).

The appraisal also included visits to NSG/Pilkington technical and operational support center in England (12/2016), visits to Brazilian and Polish operations (11/2016), and discussions with relevant technical and management teams at each location. Information collected during IFC's past engagement with Pilkington in Russia was also reviewed, and a comparison was made with the company's operations in Russia.

**Identified Applicable Performance Standards:**

*While all Performance Standards are applicable to this investment, IFC's environmental and social due diligence indicates that the investment will have impacts which must be managed in a manner consistent with the following Performance Standards*

- PS1: Assessment and Management of Environmental and Social Risks and Impacts
- PS2: Labor and Working Conditions
- PS3: Resource Efficiency and Pollution Prevention
- PS4: Community Health, Safety and Security

Performance Standards 5 through 8 are not applicable to this investment, since the project activities will be carried out within existing facilities and will not require any new land to be acquired. As all the projects are located in the well-developed industrial areas, the project will not have an impacts on biodiversity or living natural resources and indigenous peoples, and does not affect any cultural assets.

*If IFC's investment proceeds, IFC will periodically review the project's ongoing compliance with the Performance Standards.*

**Environmental and Social Categorization and Rationale:**

This project includes (i) upgrades of existing facilities that currently operate in full compliance with the local regulatory requirements as well as the IFC Performance Standards objective, and (ii) support for NSG/Pilkington's R&D program focusing on energy saving technologies. As such, the project does not result in any new significant E&S impacts; rather will result in E&S improvements in the long run. The project is therefore classified as a Category B project.

### **Environmental and Social Mitigation Measures**

*IFC's appraisal considered the environmental and social management planning process and documentation for the project and gaps, if any, between these and IFC's requirements. Where necessary, corrective measures, intended to close these gaps within a reasonable period of time, are summarized in the paragraphs that follow and (if applicable) in an agreed Environmental and Social Action Plan (ESAP). Through the implementation of these measures, the project is expected to be designed and operated in accordance with Performance Standards objectives.*

#### **PS 1 - Assessment and Management of Environmental and Social Risks and Impacts**

Environmental and Social Assessment and Management System:

NSG Group has elaborate corporate ESMS to ensure identical standards globally. This include detailed policies and procedures that ensure all facilities, irrespective of their geographical location, are using the same high standards. These policies and procedures are made publicly available through their internet based disclosures, where global goals are also disclosed (<http://www.nsg.com/en/sustainability/overview>).

A total of 81 sites, equivalent to 70% of all production, are ISO 14001 certified, with the aim of certifying all production sites. The production sites, which will use the proceeds from this investment, are all certified compliant with the ISO 14001.

IFC's visits to the selected facilities during appraisal showed a robust implementation of ESMS, with clear adherence to the corporate policies and standard operating procedures, displaying of work instructions and locally achieved results, good housekeeping, clear marking of areas allowed for vehicles and pedestrian activities respectively.

Policy:

NSG Group believes that the Sustainability agenda is integral to decreasing the costs and increasing market opportunities, and is driven by its vision, mission, values and principles, code of conduct and numerous supporting policies and procedures. (<http://www.nsg.com/en/sustainability/oursustainabilityagenda>).

As articulated on its corporate website, the vision of the NSG Group as a global glass manufacturer is "to play a positive role in helping to reduce greenhouse gas emissions and mitigating the effects of climate change". Further, "the mission of the NSG Group is to be the global leader in innovative high performance glass and glazing solutions, contributing to energy conservation and generation, working safely and ethically."

NSG Group's environmental policy is available at: <http://www.nsg.com/~media/NSG/Site%20Content/sustainability/Downloads%20attached%20to%20pages%20in%20sustainability%20section/NSG%20Environment%20Policy.ashx> and its sustainability policy is available at:

<http://www.nsg.com/~media/NSG/Site%20Content/sustainability/SustainabilityPolicyPosterJuly10EN.ashx>

#### Organizational Capacity and Competency:

The Company has a strong environment, health and safety (EHS) organization with highly experienced staff at the corporate headquarters overseeing the corporate policies and their implementation across all facilities; and specialized staff at each production location for overseeing day to day operational matters and ensuring that the corporate standards are met and all events are properly monitored registered in the online recording system.

#### Emergency Preparedness and Response:

NSG/Pilkington has documented emergency response plans as well as in-house medical personnel specialized in handling emergencies arising from glass manufacturing and handling. The biggest risks are related to cuts caused by broken glass, and this risk applies only to internal production.

The emergency response plans principles were reviewed during the appraisal site visit, and the necessary equipment was seen at the appropriate locations, readily available in case of emergencies.

#### Monitoring and Review:

NSG Group has developed and implemented a robust online data collection system that ensures that globally all the facilities collect and report the necessary information related to the identical key performance indicators (KPIs) across all facilities, thereby allowing benchmarking as well as quick identification for any deviations that can be then immediately dealt with.

The EHS related KPIs typically monitored across the NSG Group facilities include: safety incidents including near misses, over-minor incidents, lost day accidents, equipment damage, emissions, discharges, waste generation, and similar relevant parameters.

In addition, a register of all furnaces, their associated permits, relevant legislation and air pollution abatement capabilities is centrally maintained and used to support the assessment of proposed changes in operation or design.

Further, NSG/Pilkington annually publishes its sustainability report in accordance with the Global Reporting Initiative (GRI) reporting standards, which publicly discloses KPIs related to sustainability/EHS as part of its stakeholder engagement activities, as described below.

#### ***PS 2 – Labor and Working Conditions***

NSG/Pilkington employs approximately 27,000 people worldwide across manufacturing operations in over 20 countries. At Group level, about 15.9% of total employees and 13.3% of managers are women.

NSG/Pilkington productions are highly specialized operations that require significant training. The use of contract/temporary/third party workers is therefore minimal except with respect to non-production related activities like canteen, gardening, security types of activities where the skill set needed are different from the production needs.

Specialist contractors are called in when specific equipment needs cold repairs, like the relining of the melting furnaces, which only happens about every 10 years.

#### Human Resources Policies and Procedures:

NSG/Pilkington has strong policies in relation to human resource, health and safety, working conditions, terms of employment, non-discrimination, freedom to establish or join unions, equal opportunity, and grievance mechanism that are publicly disclosed.

#### Working Conditions and Terms of Employment:

NSG/Pilkington follows corporate standards for employment, which include clear employment contracts that explain i) the terms and conditions of the employment; ii) the compensation to be expected; iii) the benefits included, and iv) highlight the necessity of following the Company's EHS standards. Upon employment, every new employee receives the training necessary to perform their job satisfactorily and safely.

NSG/Pilkington has a corporate HR function that ensures all parts of the organization follow the same high standards, independent on the local country's level of legislation.

#### Workers' Organization:

NSG Group respects the freedom of association of its workforce. Workers' unions are active across several of the Company facilities. During the appraisal visits it was seen that the locations where the proposed financing will be used all have active unions.

#### Non-discrimination and Equal Opportunity:

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

The Company has expressed goals with respect to gender equality, although the sector itself seems to appeal more to male, than female employees. This is reflected in the general gender distribution at all production operations where only 16.3% are female on average, with the lowest representation being in South America.

#### Retrenchment:

There are clear procedures, including negotiation with local unions, in case of any local retrenchment needs. These principles were used in the past, when the global financial crisis

resulted in a shrinking construction market, which in turn necessitated some float lines to be mothballed. Currently no major adjustments are foreseen.

#### Grievance Mechanism:

NSG/Pilkington has a formal and well-established grievance mechanisms based on a corporate set of guidelines covering areas such as anti-bribery/anti-corruption; competition compliance; and trade regulations. NSG/Pilkington has a dedicated group dealing with corporate standards on ethics and compliance with these principles which is in charge of maintaining programs for ensuring that these principles and policies are upheld. An ethics and compliance hotline is available for all staff, should anyone need to report a non-compliance.

#### Protecting the Work Force:

NSG/Pilkington has stringent policies against both child labor and forced labor. These principles are disclosed locally and via the internet.

#### Occupational Health and Safety:

NSG/Pilkington has a centralized corporate EHS organization that provides guidance and practical help to ensure that the local health & safety experts at each production facility are fully trained. These experts ensure the individual production plants and monitor that the plants follow the centrally developed principles and corporate safety standards.

All new employees receive safety training during induction, which is then followed by regular refresher training. Further, all managers are given special training to ensure they have the correct behaviour to encourage consistent safe work principles. As the accident rates are going down, NSG/Pilkington has moved towards more stringent reporting criteria, which are then followed to ensure a continuous improvement.

All incidents from near misses, over minor injuries, to injuries resulting in lost worktime are recorded in a central online system that ensures for the central H&S function to immediately see if any facility has unexpected events.

IFC has, for over ten years, been involved with, and followed the NSG/Pilkington operations in Eastern Europe/Russia. IFC has seen consistent strong focus on safety measures for employees that has contributed to very low accident rates. During the appraisal visit, it was confirmed that stringent safety principles and practices were consistently adhered to at all facilities. These included, for instance: clear separations between vehicle/machinery movements areas and people movement areas, strict housekeeping standards, consistent use of PPE, all safety systems operational, etc.

The accident data is centrally evaluated using online reporting that ensured no facility falls below the expected standard. The LDA/MMM (Lost Day Accident/Million Man-Hours) for the last five years has consistently been below 2. As another example, the Company's consolidated South

American operations, currently has 12-month rolling LDA/MMH below 0.5 as compared to 5 on average in 2015 for the glass industry in USA (Ref: publicly available statistics OSHA).

#### Workers Engaged by Third Parties:

As described earlier, NSG/Pilkington is a specialized production operation, and workers engaged by third parties will therefore be limited to local suppliers of non-production related services. Anyhow, NSG/Pilkington require such suppliers to respect the same labour standards as used by NSG/Pilkington, and any accidents or incidents by such workers will be recorded in the system and included in the respective location's statistics.

#### Supply Chain:

NSG/Pilkington has published its Code of Conduct for suppliers ([http://www.nsg.com/~media/NSG/Site%20Content/about-nsg/Downloads%20attached%20to%20pages%20in%20about-nsg%20section/Supplying%20NSG/11122014/NSGGroupSupplierCodeofConduct\\_EN.ashx](http://www.nsg.com/~media/NSG/Site%20Content/about-nsg/Downloads%20attached%20to%20pages%20in%20about-nsg%20section/Supplying%20NSG/11122014/NSGGroupSupplierCodeofConduct_EN.ashx) ).

While Pilkington has a relatively small supplier segment related to the raw materials and special equipment, their worldwide operational footprint means that they have evaluated >280 suppliers vis-à-vis this Code of Conduct.

The overriding intention of the Suppliers Code of Conduct is to ensure that NSG/Pilkington suppliers will carry out their business in a safe, professional, legal and ethical manner and in a way that demonstrates corporate social responsibility. The code focuses specifically on ethical behaviour, social behaviour, and environmental behaviour. In order to provide materials or services to NSG Group, suppliers are required to demonstrate their compliance with this Code of Conduct.

### ***PS 3 – Resource Efficiency and Pollution Prevention***

The production of structural and automotive glass, which is the core of this investment, is based on substantial inert raw materials (except for the fuels used).

#### Resource Efficiency and Pollution Prevention:

NSG/Pilkington is among the most resource conscious glass manufacturers in the world, and are using their own designs to ensure maximum efficiency of their glass melting and handling facilities. The Company is at the forefront with respect to development of glass products that limit heat intrusion in hot climates, and heat losses in cold climates.

The production losses at the glass manufacturing facilities are further minimized by intensive recycling of clean waste glass. Recycling of clean broken glass products reduces the melting

energy requirement, thereby eliminating the generation of waste at the facilities, and reducing the energy consumption as well.

#### Water and Wastewater:

Water consumption at glass manufacturing facilities is limited since they use dry material handling processes. This also means that the amount of waste water at each facility is roughly limited to the generation of domestic wastewater from kitchen and bathroom water. NSG/Pilkington establishes its own wastewater treatment facilities onsite, when it is not possible to connect to communal or industrial estate based systems.

#### Air Emissions and Ambient Air Quality:

NSG Group has a well-defined strategic approach to emission abatement, with principles that can be applied worldwide. While it is a corporate requirement that all the operations must meet all legislative standards as a minimum, when the local requirements are deemed insufficient NSG Group's own corporate standards take precedent. NSG/Pilkington's standards are incorporated with due respect to local requirements and are consistent with the WBG EHS guidelines.

During the process of melting the raw materials into glass fuels, the preferred fuel is gas, because it burns clean to the benefit of both the products and also result in the least air pollution. Due to the need for relatively high temperatures in float glass production, NO<sub>x</sub> is, however, generated during the combustion process. The generation of NO<sub>x</sub> is controlled by the use of low-NO<sub>x</sub> burners, optimization of burning zones, and is further controlled by secondary treatment methods when necessary.

#### GHG Emissions:

The primary GHG emissions from NSG/Pilkington relates to the production of the float glass, which is the first step in NSG/Pilkington's production process. Float glass is used for construction glass or transformed into automotive glass.

To minimize the resulting emissions from the float glass production NSG/Pilkington has introduced technological upgrades to optimize fuel utilization and recover heat. The furnace chambers are equipped with optimized shapes that ensures as much as possible of the heat from the fuel is radiated back into the melting batch, outgoing gas is passing heat recovery systems, which with oscillating firing directions can recover and reintroduce much of the otherwise lost energy.

By using these inventions, the current CO<sub>2</sub> emission per ton of glass produced has been lowered to just above 4 tons CO<sub>2</sub> per ton, of which around 1 ton CO<sub>2</sub> per ton is due to electricity consumption. The NSG Group emitted (direct and indirect) 4.7 million tons of CO<sub>2</sub> in 2009 as reported on its website.

While the production and processing of glass results into direct and indirect emission of CO<sub>2</sub>, the current project with its focus on process optimization and research, and development of energy efficient products, does not in itself result in CO<sub>2</sub> emissions.



Moreover, the production of specialized glass products for construction contribute to saving a significant amount of energy during its lifespan. For example, the manufacturing of one square meter of low-e double glazing leads to the emission of 25 kg of CO<sub>2</sub>. However, studies show that the CO<sub>2</sub> saved by replacing one square meter of single glazing with low-e double glazing in a typical European building is 91 kg per year, offsetting the CO<sub>2</sub> emitted during manufacturing after only 3.5 months in use. If ordinary double glazing is replaced by low-e double glazing, the offset period is typically 10.5 months.

(<http://www.nsg.com/en/sustainability/glassandclimatechange/embodiedc02infloatglass>).

### Solid Waste Management

Waste streams from the production process are limited, as most broken (glass) products can be reused in glass production and packing materials, while other waste are separated and recycled as per the specific local regulatory requirements and environmental permit conditions.

Very small amounts of solid waste from the facilities, are sorted and recycled to an extent possible. All solid waste is either send for recycling, or handled by approved local waste management companies.

### Hazardous Materials:

The production of float glass and automotive glass products has minimal use of hazardous materials. Coloring of products are handled in strict air cleaning enclosures, for both the benefit of the product and the environment.

### ***PS 4 – Community Health, Safety and Security***

NSG/Pilkington's production activities have minimal impact on its neighboring communities, and are located with due respect to industrial zoning requirements. Its main impacts relate to the transportation of imported raw materials, and export of final products or intermediaries. For its transport operations, NSG/Pilkington imposes its own stringent standards.

NSG/Pilkington does not use armed security at any of its facilities.

### **Stakeholder Engagement:**

NSG/Pilkington has diversified stakeholder engagement approaches and programs depending on the location of its facilities. Further, NSG/Pilkington's corporate structure ensures a broader overall dissemination of its operating principles, results and engagement principles. These principles are found at the following link: <http://www.nsg.com/en/sustainability/employees/communities>

Employees are encouraged to participate in their local communities and appropriate community organizations, either on an individual basis, or with the Group. As needs vary from community to community, each of the Group's business units, has some flexibility to identify most appropriate ways to grow with their respective community.

The NSG Group Sustainability Report forms an important part of the Group's non-financial performance communications to its stakeholders. It reflects Group, regional and site-level reporting. The report covers those businesses over which the NSG Group has management control. NSG Group has chosen to assess its performance against the GRI (Global Reporting Initiative), which aims to promote common conventions and to enable comparability in financial reporting, and in corporate reporting on economic, environmental, and social performance.

**Broad Community Support:**

BCS – Not Applicable

**Environmental and Social Action Plan:**

No ESAP is required for this project.

**Local Access of Project Documentation:**

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