

# CSR/ESG Management

## Material Issue: Environmental Management

### Related Key Stakeholders



### Why Environmental Management Matters

The realization of a sustainable society in which economic development and environmental protection coexist is becoming an increasingly pressing issue due to growing concern over the impact of climate change, particularly in light of the recent succession of extreme weather events across the world. Accordingly, there is growing competition to develop new technologies and products that help decrease environmental impact.

### NSK's Approach

NSK adheres to the principle that global environmental protection, as outlined in the Company's mission statement, must be an ever-present concern in all its business activities. Accordingly, the Group states in its Environmental Policy that environmental management forms the basis of its existence and pursuits. While raising the awareness of each and every one of its directors and employees, NSK works to create environmentally friendly products, implement global warming countermeasures, enact measures to promote resource conservation and recycling, and enforce measures to reduce the use of environmentally harmful substances.

### Environmental Management

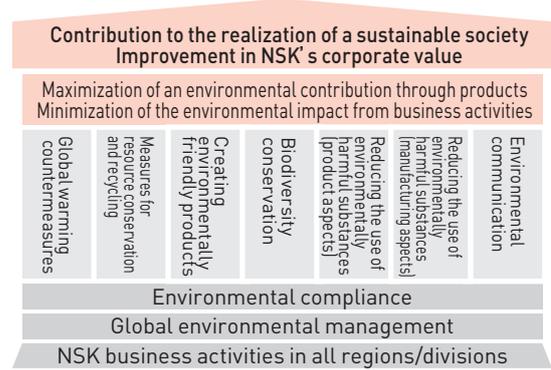
NSK has established a Global Environment Conservation Committee as its highest decision-making body for environmental management. Chaired by a senior vice president and composed of the officers involved, such as from business division headquarters and technology development divisions, the Global Environment Conservation Committee deliberates NSK's environmental action plans and also reviews and revises the progress of initiatives. On the basis of the Committee's decisions, theme-based specialized subcommittees—such as the energy, resource conservation, environmental product, logistics, and green office subcommittees—, NSK's Environmental Division as well as its headquarters in Europe, the Americas and China coordinate their necessary activities, and each department and each business site work together to promote environmental efforts.

Held three times in fiscal 2017, the Global Environment Conservation Committee examined and discussed, for example, the setting of medium- and long-term activity targets as well as activities contributing to the reduction of CO<sub>2</sub> emissions at the customer use stage through its products.

### NSK Environmental Policy

Our commitment to environmental management forms the basis of our existence and our pursuits. We are determined to take independent and assertive action in aiming to establish sustainable societies.

- 1. Prevention of Global Warming**  
To actively support efforts to prevent global warming by developing environmentally friendly manufacturing processes and technologies.
- 2. Reduction of Environmental Impact**  
To establish and continually improve environmental management systems and systems for the management of chemical substances in products; to comply with regulations, to prevent pollution, and to reduce environmental impact.
- 3. Contribution to Societies**  
To be actively involved in the social development of local communities where we operate by promoting our global corporate activities, to create affluent societies that are in harmony with the environment, and to promote the preservation of biodiversity.



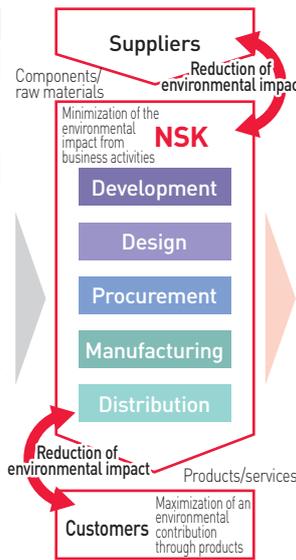
### Input and Output of Global Business Activities (FY2017)

NSK works hard to continually reduce its environmental impact and to use energy and resources in the most effective manner by quantifying the amount of resources used in its business activities and the amount of greenhouse gases, waste and other emissions that it generates.

Steadily making progress with environmental measures, such as energy conservation and resource saving, at each stage of its business activities, from development and design to production and logistics, NSK is also aiming to reduce the environmental burden on society as a whole.

This, the Company does by procuring environmentally friendly components/raw materials and working together with suppliers and customers in advancing the development, manufacture and promotion of environmentally friendly products that allow customers to save energy and conserve resources.

INPUT (Global)	
Materials and parts	
Steel	756 × 10 <sup>3</sup> tons
Oils and greases	21 × 10 <sup>3</sup> tons
Energy	
Energy	17,088TJ
Fuel	2,426TJ
Electricity and heat	14,662TJ
Water supply	
Water	4,713 × 10 <sup>3</sup> m <sup>3</sup>
Groundwater	1,869 × 10 <sup>3</sup> m <sup>3</sup>
General water	2,325 × 10 <sup>3</sup> m <sup>3</sup>
Industrial water	519 × 10 <sup>3</sup> m <sup>3</sup>
Materials and parts (Japan) (Environmentally harmful substances)	
PRTR-designated substances	490 tons



OUTPUT (Global)	
Atmospheric gases	
Greenhouse gases [CO <sub>2</sub> equivalent]*1	997.3 × 10 <sup>3</sup> tons
Fuel combustion (Scope 1*)	143.0 × 10 <sup>3</sup> tons
Electric power/heat use (Scope 2*)	854.3 × 10 <sup>3</sup> tons
(Reference) Indirect emissions (Scope 3*)	2,038.7 × 10 <sup>3</sup> tons
NOx	132 tons
SOx	50 tons
Waste	
Total waste	223.5 × 10 <sup>3</sup> tons
(Japan 105.5 × 10 <sup>3</sup> tons, outside Japan 106.0 × 10 <sup>3</sup> tons)	
Recycled	205.1 × 10 <sup>3</sup> tons
Landfill waste	3.0 × 10 <sup>3</sup> tons
Incinerated waste and water treatment	15.4 × 10 <sup>3</sup> tons
Water quantity	
Wastewater	3,040 × 10 <sup>3</sup> m <sup>3</sup>
Rivers	453 × 10 <sup>3</sup> m <sup>3</sup>
Sewage system	2,587 × 10 <sup>3</sup> m <sup>3</sup>
BOD	1.3 tons
Environmentally harmful substances (Japan)	
Discharge/transfer of PRTR-designated substances	105 tons
VOC	154 tons

\*1 The amount of greenhouse gas emissions is multiplied by each region's global warming potential. In Japan, calculated in conformity with the Ministry of the Environment and the Ministry of Economy, Trade and Industry's Greenhouse Gas Emission Calculation and Reporting Manual. Outside Japan, calculated in conformity with the International Energy Agency's CO<sub>2</sub> Emissions from Fuel Combustion.

\*2 The amount of greenhouse gas emissions for Scope 1 to Scope 3 are calculated based on the GHG Protocol calculation standards. Scope 1 is the amount of emissions from a company's own fuel use; Scope 2 is the amount of emissions from power plants, etc., due to the supply of electric power and heat from outside (consumed by a company); and Scope 3 is the amount of indirect emissions, such as emissions from supplier manufacturing processes for procured components and raw materials.

## Developing Environmentally Friendly Products

The products of the future must perform better than those of today to help reduce the impact that human societies have on the natural environment. To contribute to a safer, smoother society and to help protect the global environment, as spelled out by its corporate philosophy, NSK is working hard to accurately determine the needs of its customers and of broader society, as well as to develop environmentally friendly products and technologies that make the most of the Company's Four Core Technologies (tribology, materials, numerical simulation, and mechatronics). By delivering these products and technologies to all corners of the globe, NSK is aiming to contribute to the increased sophistication of the machinery in which its products are incorporated, the development of environmentally friendly industries as well as aiming for the maximization of an environmental contribution through its products.

### Basic Policy for the Development of Environmentally Friendly Products

The NSK Group minimizes the environmental impact of its products at every stage—from R&D and design, to production, usage, and disposal—by upholding the following standards:

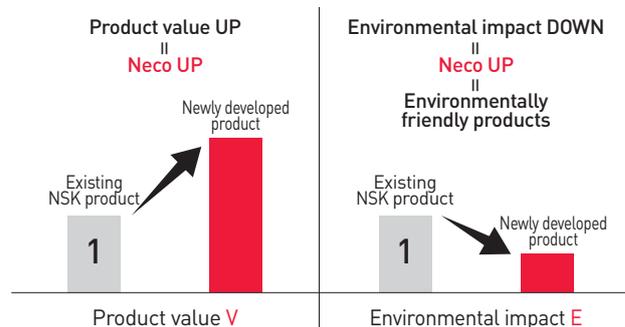
1. Each product should contribute toward the energy and resource conservation of the machine in which it is installed.
2. The amount of energy and resources required during product manufacturing should be minimal.
3. Environmentally harmful substances should not be used in products or manufacturing processes.
4. Products should contribute to the health and safety of end users by having low vibration levels and low noise and dust emissions.

## NSK Eco-Efficiency Indicators (Neco)

NSK conducts assessments of products under development by utilizing NSK eco-efficiency indicators (Neco) as a yardstick for quantitatively assessing the degree of their environmental friendliness. The Neco score is a numerical value obtained by dividing the product value V by the environmental impact E. The product value numerator V represents, in numerical form, the degree of improvement of a product in development were an existing product assessed at 1 with regard to assessment parameters that need to be increased to improve product value, such as service life, performance and accuracy. By comparison to an existing NSK product, the environmental impact denominator E represents assessment parameters, such as product weight, power consumption and friction loss, which must be reduced to decrease the environmental impact.

To use a bearing as an example, the longer its service life when compared to an existing product, the better its ability to withstand high-speed rotation, the lighter and more compact that bearing is, and the lower the friction loss, the higher its Neco value will be, and that bearing will be assessed as an environmentally friendly product. NSK is working to develop new products with a Neco score of 1.2 or higher and had developed 224 environmentally friendly products by fiscal 2017.

$$\text{Neco} = \frac{\text{Product value V (product life, functions)}}{\text{Environmental impact E (resource and energy conservation)}}$$



## Environmentally Friendly Products Developed in Fiscal 2017

In fiscal 2017, NSK developed five new environmentally friendly products that help customers conserve energy and resources.

Products	Technology Developed by NSK	Environmental Benefits for NSK's Customers	Neco
<b>Pawl-type one-way clutches for hybrid vehicles</b> <a href="http://www.nsk.com/company/news/2017/press0605a.html">http://www.nsk.com/company/news/2017/press0605a.html</a>	Applicable to lubricant-free environment Low friction loss Smaller, lighter	Improved fuel economy Lighter (resource conservation)	2.3
<b>Low-noise thrust needle roller bearings for electric vehicles and hybrid vehicles</b> <a href="http://www.nsk.com/company/news/2017/1206a.html">http://www.nsk.com/company/news/2017/1206a.html</a>	Low friction loss Weight reduction	Improved energy economy	2.1
<b>Long-life roller bearings for automobile transmissions</b> <a href="http://www.nsk.com/jp/company/news/2018/0221a.html">http://www.nsk.com/jp/company/news/2018/0221a.html</a> (Japanese)	Longer life	Lighter (resource conservation) Improved fuel economy	1.3
<b>High-performance tapered roller hub unit bearings for pickup trucks, large SUVs, and commercial vehicles</b> <a href="http://www.nsk.com/company/news/2018/0405a.html">http://www.nsk.com/company/news/2018/0405a.html</a>	Improved reliability Low friction loss	Improved reliability Improved fuel economy	1.3
<b>Low-friction, high-performance seals for deep groove ball bearings</b> <a href="http://www.nsk.com/jp/company/news/2017/1006a.html">http://www.nsk.com/jp/company/news/2017/1006a.html</a> (Japanese)	Both high performance and low friction loss	Improved reliability Energy savings	1.4

Other related information

For further information on environmental management (policy, framework, targets/achievements, environmental accounting), global warming countermeasures, measures for resource conservation and recycling, reducing the use of environmentally harmful substances, and biodiversity conservation, please refer to our CSR Report (NSK website: <http://www.nsk.com/sustainability/csrReport/index.html>).