

Realizing a Low-carbon Society

The Nikon Group recognizes that, in order to realize the goal of building a low-carbon society, it is important to implement measures not just within the Nikon Group, but in the supply chain as well. We are formulating strategies for a wide range of different production processes to reduce carbon dioxide (CO₂) emissions throughout the product lifecycle.

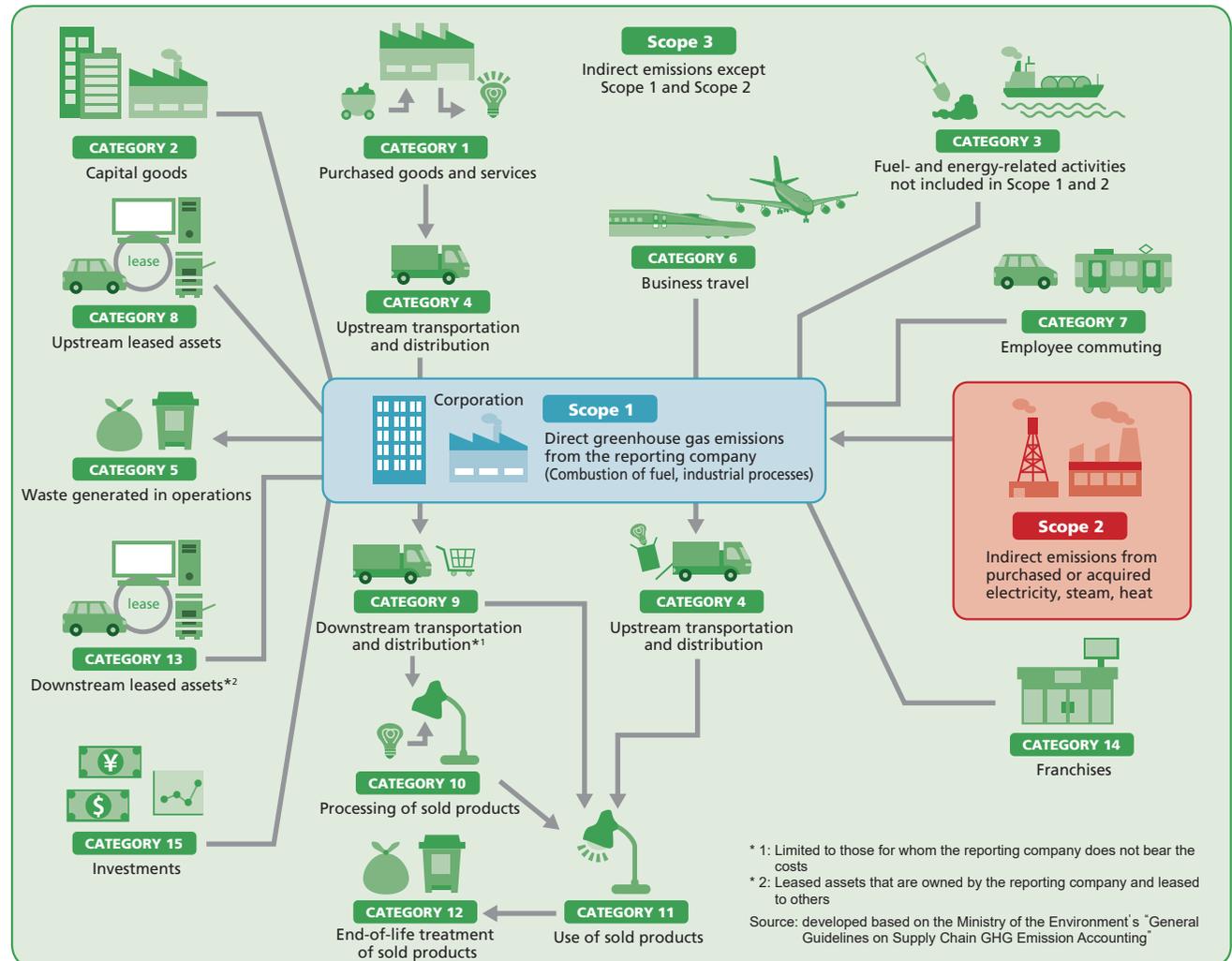
Initiatives to Reduce CO₂ Emissions in the Supply Chain

When calculating greenhouse gas emissions, the Nikon Group has gone beyond the conventional approach of calculating direct emissions (Scope 1^{*1}) and indirect emissions deriving from energy consumption (Scope 2^{*2}) by also calculating indirect emissions related to business activity in the supply chain (Scope 3^{*3}). In this way, we are able to assess the environmental load in the supply chain, and we are endeavoring to implement suitable response strategies on the basis of these assessments.

*1 Scope 1
Direct greenhouse gas emissions due to the use of fuel on site.

*2 Scope 2
Indirect greenhouse gas emissions from consumption of purchased electricity, heat or steam.

*3 Scope 3
Indirect greenhouse gas emissions related to business activities in the supply chain (excluding emissions already included in Scope 1 and 2).



* 1: Limited to those for whom the reporting company does not bear the costs
 * 2: Leased assets that are owned by the reporting company and leased to others
 Source: developed based on the Ministry of the Environment's "General Guidelines on Supply Chain GHG Emission Accounting"

> Nikon Environmental Management > Environmental Management Promotion System > [Realizing a Low-carbon Society](#) > Realizing a Resource-circulating Society > Realizing a Healthy and Environmentally-safe Society

■ Assessing Emission Volume

On the basis of the Scope 3 emissions estimation results, it was determined that Category 1 (purchased goods and services) accounted for the largest share of emissions.

In the future, while working to further refine the precision of our estimates, we will also be implementing measures to reduce CO₂ emissions, giving priority to those categories that have the highest emissions volume.

▶ [Reducing CO₂ Emissions in Distribution \(Scope 3\) \(P38\)](#)
[Initiatives to Reduce CO₂ at Nikon Group \(Scope 1, 2\) \(P36\)](#)

CO₂ Emissions List Breakdown by Scope and Category

(Unit: t-CO₂)

Scope/Category	Boundary	CO ₂ Emissions
Scope 1	Nikon Group companies in Japan Group manufacturing companies outside Japan	24,329
Scope 2	Nikon Group companies in Japan Group manufacturing companies outside Japan	189,284
Scope 3 (individual categories within Scope 3 listed below)		
1. Purchased goods and services	Imaging Products Business and Precision Equipment Business	1,329,197
2. Capital goods	The entire Nikon Group	92,055
3. Fuel- and energy-related activities not included in Scope 1 and 2	Nikon Group companies in Japan Group manufacturing companies outside Japan	17,468
4. Upstream transportation and distribution	The entire Nikon Group	82,003
5. Waste generated in operations	Nikon (excluding Head Office) Group manufacturing companies in Japan Group manufacturing companies outside Japan	2,905
6. Business travel	Nikon	6,067
7. Employee commuting	Nikon	3,206
8. Upstream leased assets (included in Scope 2)	Calculation included in Scope 2	—
9. Downstream transportation and distribution	Excluded (because the amount is very small)	—
10. Processing of sold products (excluded)	Excluded (because the amount is very small)	—
11. Use of sold products	Imaging Products Business and Precision Equipment Business	302,484
12. End-of-life treatment of sold products	Imaging Products Business and Precision Equipment Business	5,129
13. Leased assets (downstream) (excluded)	Excluded (because the amount is very small)	—
14. Franchises (out of scope)	Out of scope	—
15. Investments (out of scope)	Out of scope	—

Measures Taken by the Nikon Group to Reduce CO₂ Emissions

The Operating Environmental Subcommittee plays a central role in the planning and evaluation of environmental protection activities within the Nikon Group, formulating action plans for CO₂ emission reduction for each business facility and each Group company. Individual units use these plans as a basis for the implementation of CO₂ reduction activities, and efforts are also made to promote the visualization of environmental data, to facilitate the achievement of the goals that have been set.

■ Current Status of the Nikon Group's CO₂ Emissions

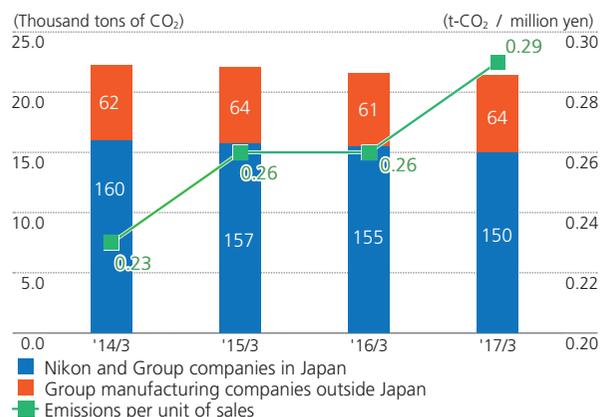
In the year ended March 31, 2017, the CO₂ emissions of Nikon and Group companies in Japan totaled 121,000 tons, which meant that we had met our target*¹ of keeping CO₂ emissions in Japan down to within 131,000 tons. CO₂ emissions from Group manufacturing companies outside Japan in the year ended March 31, 2017 totaled 64,000 tons.

Since by far the largest share of greenhouse gas emissions from Nikon and Group companies in Japan are in the form of CO₂ emissions deriving from energy consumption, with other greenhouse gases*² accounting for 4.8% of the total, the Nikon Group's greenhouse gas reduction targets and management are based on CO₂ emissions from energy consumption.

*¹ Target
The CO₂ emission factors used are the weighted average of the emissions factors for the period between the year ended March 31, 2006 and the year ended March 31, 2008.

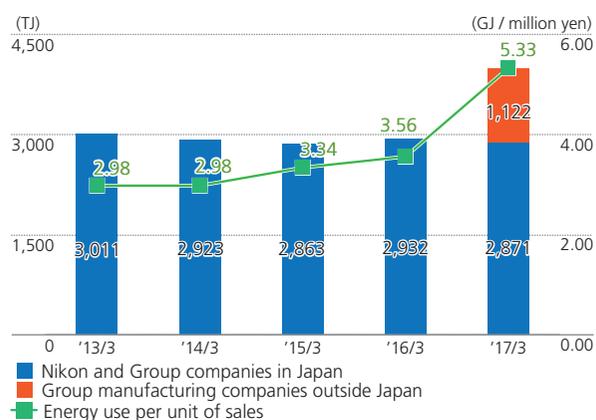
*² Other greenhouse gases
Greenhouse gases excluding CO₂ emissions from energy sources. Specifically, this term is used to refer to CH₄, N₂O, HFC compounds, PFC compounds, SF₆, NF₃, and non-energy CO₂ emissions.

CO₂ Emissions from Nikon Group



* The following values were used for CO₂ emission factors:
Electric power:
In Japan: Specific value of each electricity company
Outside Japan: International Energy Agency (IEA) factors by country for the year ended March 31, 2013
City gas: Specific value of each gas company
Other fuels: Values given in the GHG Emissions Accounting and Reporting Manual to calculate the energy usage in each fiscal year.
* Boundaries (both in and outside Japan) have been expanded since the year ended March 2016.

Energy Use by Nikon Group

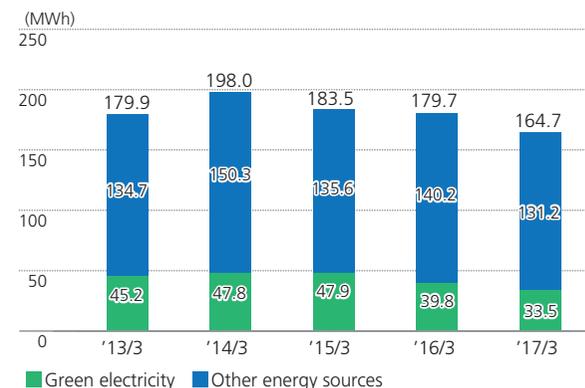


* Energy use is calculated using the following unit calorific values:
Electricity and other fuels: Values given in the GHG Emissions Accounting and Reporting Manual to calculate the energy usage in each fiscal year.
City gas: Specific value of each gas company
* Overseas values have been added since the year ended March 2017.

■ Utilizing Renewable Energy

The Nikon Group is working to promote the use of renewable energy. Nikon's Kumagaya Plant has been operating a solar power generation system at full capacity since 2010. The system generates at least 100,000 kWh of power per year, reducing CO₂ emissions by around 50 tons per year. Nikon's Yokohama Plant has installed solar power equipment on the walls of Building No. 502 (which was completed in 2013), and this equipment generates approximately 29,000 kWh per year with a CO₂ reduction effect of approximately 10 tons per year. The Yokohama Plant also cosponsored Yokohama City's project for wind power generation as a Y (Yokohama) Green Partner Company over the period between the year ended March 31, 2008 and the year ended March 31, 2017.

Renewable Energy Use by Nikon



> Nikon Environmental Management > Environmental Management Promotion System > [Realizing a Low-carbon Society](#) > Realizing a Resource-circulating Society > Realizing a Healthy and Environmentally-safe Society



Monitor showing the amount of power generated in real time at Nikon's Kumagaya Plant



Solar power generation panel at the Kumagaya Plant

Examples of CO₂ Emissions Reduction Measures Implemented by the Nikon Group

Reducing CO₂ Emissions by Making Product Development More Efficient

By continuing to strive for further improvement and evolution in the core technologies that underpin our manufacturing operations, the Nikon Group is able not only to enhance the efficiency of development and production operations and raise quality standards, but also to reduce the environmental burden by achieving reductions in energy consumption and the generation of waste. Hikari Glass Co., Ltd., a Group company of Nikon that develops and manufactures optical glass for use in cameras, microscopes etc., starts by small-scale testing to determine production conditions, before going on to testing with full-scale volume production equipment. However, sometimes the volume-production testing does not go smoothly; not

only does this lead to delays in ramping up production, it also involves considerable expenditure of energy for heating glass, and generates large amounts of waste glass. To address this issue, Hikari Glass's development division set to work, in collaboration with Nikon, to improve efficiency. As a result of their combined efforts, the quality of existing products has been improved, new products can now be developed within a shorter space of time, and annual CO₂ emissions have been reduced by 30 tons.

CO₂ Emissions Reduction Using Steam

Nikon Imaging (China) Co., Ltd. uses steam, which is the by-product of power generation during the winter season (from November to March), to purify reverse osmosis (RO) water. This has made it possible to reduce annual electricity consumption by around 600,000 kWh.



Steam pipes running inside the premises at Nikon Imaging (China) Co., Ltd.

Highly Efficient Lighting

Nikon Imaging (China) Co., Ltd. is working to reduce energy use by various measures such as reducing the number of fluorescent lights within the plant, switching over to the use of LED lights, and implementing LEDs with motion sensors to turn off the lights when no one is present.



Fluorescent-style LED lighting in common areas at Nikon Imaging (China) Co., Ltd

Expanding Energy Conservation Efforts

At Nikon (Thailand) Co., Ltd. the CO₂ Committee Group, formed from the in-house environmental officers, conducts energy conservation patrols. As well as using these patrols to make frequent checks of the temperature controls and lighting, they also work to ensure the proper management of air conditioners and lighting.



Energy conservation patrol at Nikon (Thailand) Co., Ltd.



Sign posted next to light switches at Nikon (Thailand) Co., Ltd., reminding employees to save energy

Conserving Energy at Offices

All business facilities are switching to highly efficient lighting, introducing motion sensor-equipped lighting, and working to make for air conditioning equipment and office machinery more efficient.

At Nikon India Private Limited, almost all conventional lightbulbs have been replaced with LED lighting. As LED lighting is brighter, the number of individual lights installed can be reduced, which has made it possible to achieve a significant reduction in electricity consumption.



An office at Nikon India Private Limited, where LED lights are now used for almost all the lighting

Measures Adopted in Regard to Commuting and Commercial Vehicles

All business facilities are making efforts to adopt fuel-efficient vehicles such as hybrid cars and other environmentally-friendly cars as company cars. Some business facilities are also encouraging employees to use commuting methods that have a low environmental impact. Nikon Precision Inc., in the U.S.A., has installed electric vehicle charging stations on company premises. This



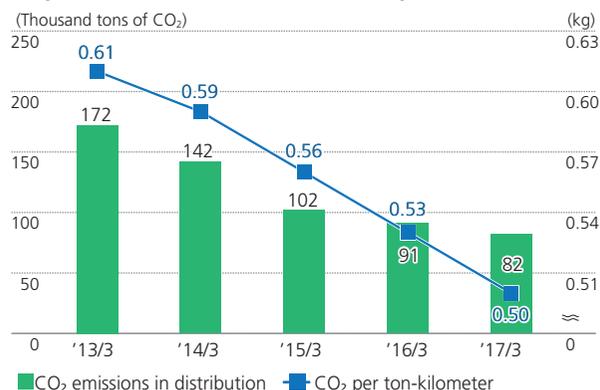
Electric vehicle charging station at Nikon Precision Inc.

measure has helped to spread awareness of the company's environmentally-friendly stance among employees, and the number of employees using electric vehicles to get to work has increased.

Reducing CO₂ Emissions in Distribution

As the products of Nikon Group are manufactured in facilities located mainly in Asia and distributed worldwide, Nikon have identified the distribution routes, including those used by Group manufacturing companies in Japan, and obtained numerical data on transportation volumes and CO₂ emissions, and we are working to reduce CO₂ emissions during transport. We calculate CO₂ emissions resulting from distribution by using a GHG Protocol tool. In the year ended March 31, 2017, CO₂ emissions amounted to 1,383 tons for distribution in Japan and 80,000 tons for international shipment and distribution outside Japan.

CO₂ Emissions from Distribution in Japan, International Shipment and Distribution Outside Japan



Promotion of Modal Shifts

The Nikon Group promotes modal shifts* in order to reduce environmental impact. We are shifting the main mode of delivery from airplane to ship, and from truck to railway. Nikon's Imaging Products Business is considering measures to realize rail transport from China to Europe. This shift from air to rail would reduce distribution-related CO₂ emissions to around one-seventieth of the current level. Besides products, a similar shift is being promoted with respect to the supply of packaging materials to procurement partners, as well as the transportation of delivery cases, installation tools, etc.

* Modal shift: This term is normally used to refer to a shift to a different method of transport, in order to reduce the impact on the environment.

Environmentally-friendly transportation

Besides gradually shifting over to the use of environmentally-friendly vehicles with low fuel consumption for both company cars and delivery trucks, the Nikon Group is also implementing measures to promote eco-driving (fuel-efficient driving). Nikon Business Service Co., Ltd., which provides logistics and transportation services for the Nikon Group, requires all of its drivers in Japan to undergo regular eco-driving training courses.

The Nikon Group is also implementing measures to improve transportation efficiency. For transport between Nikon's Kumagaya Plant and Narita Airport, a shift from having delivery vehicles depart on an "as-needed" basis to a system of regular scheduled deliveries has led to a dramatic improvement in efficiency. Measures are also being taken to reduce delivery distances, by adjusting transportation routes for international logistics. Other steps are also being taken to further enhance Nikon's environmentally-friendly logistics, such as changing the dimensions of the presentation boxes that digital cameras are packaged in so that they can be stacked more efficiently, and doing away with the need for outer packing cases by shifting away from container transport to pallet transport, etc.