

NGK's Core Policy on the Environment

Recognizing that protecting the environment is a vital issue that all of humanity must face, the NGK Group formulated its Core Policy on the Environment in April 1996 based on Environmental Philosophy and Environmental Action Guidelines in order to bring its corporate activities into harmony with the environment. On the basis of this policy, the NGK Group works to reduce the environmental impact of business activities, and actively strives to help protect the environment by developing products and technologies to that end.

Environmental Philosophy

Given its corporate philosophy—"NGK products and technologies must create new value and contribute to the quality of life"—NGK will contribute to tackling environmental issues through its "Triple-E" business segments of ecology, electronics, and energy to create a comfortable environment for future generations.

Visit this page for details on NGK's Core Policy on the Environment.

<https://www.ngk-insulators.com/en/sustainability/environment.html>

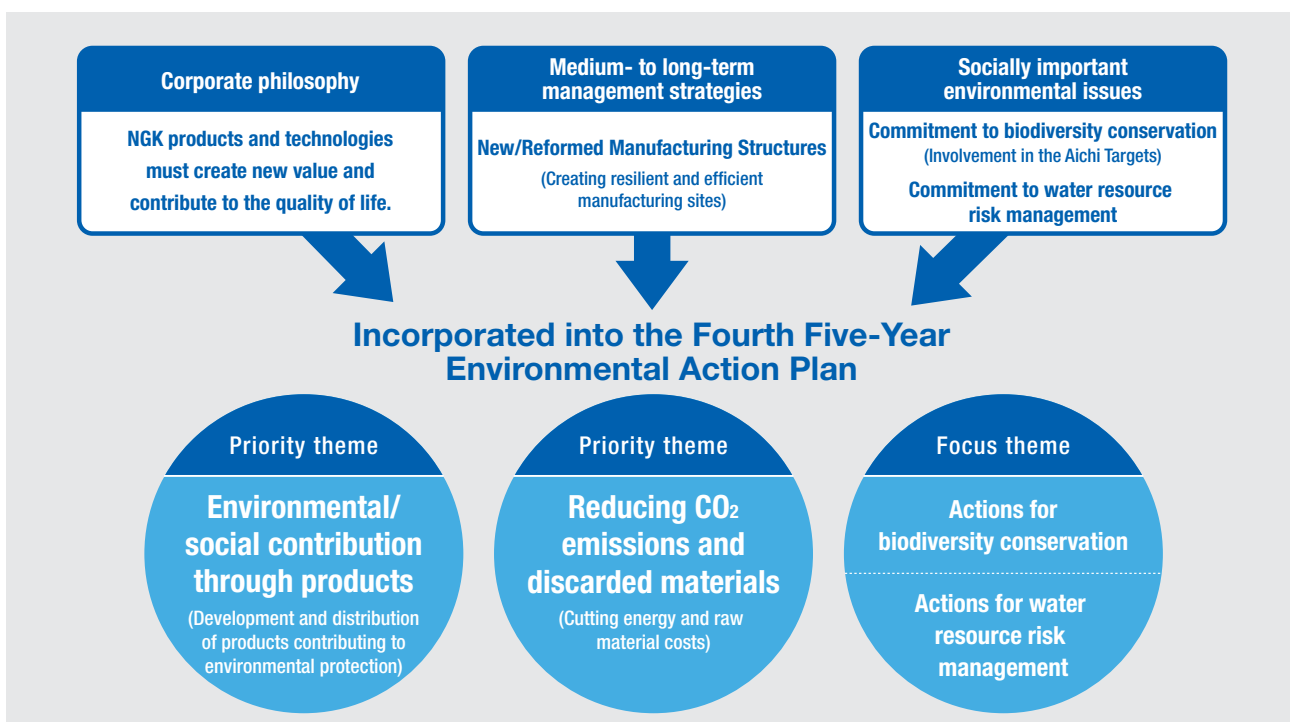
Five-Year Environmental Action Plan

The NGK Group has established the Fourth Five-Year Environmental Action Plan (2016–2020). To achieve the goals of the Plan, we are promoting environmental activities, setting annual targets.

Outline of the Fourth Five-Year Environmental Action Plan (2016–2020)

The NGK Group organizes environmental initiatives by creating five-year action plans. The Fourth Five-Year Environmental Action Plan, initiated in fiscal 2016, has been formulated to broadly encompass major global environmental challenges that businesses are expected to take, and to select two key issues each for two groups of themes, namely, priority themes and focus themes.

The two priority themes are: environmental/social contribution through products; and reducing CO₂ emissions and discarded materials. The first priority theme directly reflects the core concept of the corporate philosophy, while the other theme closely relates to NGK's medium- to long-term initiative of New/Reformed Manufacturing Structures for increasing competitiveness. For focus themes, we have also set two issues: biodiversity conservation and water resource risk management/response, both being major challenges for which socially responsible corporate action is required with greater urgency.



Five-Year Environmental Action Plan Progress Report

The initiatives planned under the Fourth Action Plan and their progress (targets and results for fiscal 2017; targets for fiscal 2018 and 2020, the final year) are summarized in the table below.

In fiscal 2017, the annual goals for nearly all of the cumulative quantitative goals were achieved, while progress on other items proceeded according to the plan established at the start of the period. In particular, the efforts undertaken by NGK's business groups produced results for basic unit per net sales for discarded materials that significantly exceeded the annual goal. Progress on the current five-year plan is proceeding steadily at a pace above that anticipated at the time of the plan's creation. Notably, the target reduction rate against BAU for CO₂ and discarded materials was achieved ahead of schedule and was, therefore, adjusted upwards. For fiscal 2018, as well, the NGK Group is working in concert to undertake environmental activities that will enable target goals to be met.

Category	Item	KPI	Fiscal 2017			Fiscal 2018	Fiscal 2020	
			Target	Result	Self-evaluation ¹	Target	Target	
Environmental/social contribution	 Environmental/social contribution through products	Develop and distribute products contributing to environmental protection	Sales growth (%) (consolidated)	Increase by 30% from fiscal 2013	Increased by 37% from fiscal 2013	○	Increase by at least 43% from fiscal 2013	Increase by at least 60% from fiscal 2013
		Promote green procurement	Plan progress (%)	At least 99% of NGK's suppliers in Japan agree to comply with the CSR Procurement Guidelines	99.9% agreed (100% including suppliers who partially agreed)	○	At least 99% of NGK's suppliers in Japan agree to comply with the CSR Procurement Guidelines	Maintain in Japan, expand overseas
	 Promotion of environmental communication	Contribute to local communities	Plan progress (%)	Send instructors to guest lecture programs, participate in local environmental protection activities	Sent instructors to local children's centers, participated in local environmental protection activities	○	Send instructors to guest lecture programs, participate in local environmental protection activities	Continually enhance actions partnering with communities
		Raise environmental awareness	Plan progress (%)	Provide environmental education for employees, establish employee communication on environmental themes, encourage participation in environmental events	Provided training programs by job grade, organized CSR Talk Live, installed "green curtains"	○	Provide environmental education for employees, establish employee communication on environmental themes, encourage participation in environmental events	Continually enhance environmental training and information disclosure
	 Conservation of biodiversity	Promote actions based on biodiversity conservation guidelines	Plan progress (%)	Continue biodiversity survey at company-owned site, promote employee participation in My Action Declaration project	Exhibited survey results on-site, 4300 employees participated in My Action Declaration project	○	Extend My Action Declaration project to domestic Group companies	Expand and enhance content of Aichi Targets actions
				 Prevention of global warming	Reduce CO ₂ emitted from manufacturing	Basic unit per net sales (consolidated)	Reduce by 11% from fiscal 2013	Reduced by 14% from fiscal 2013
	Reduce CO ₂ emitted from supply chains	Reduction rate against BAU (%) ² (consolidated)	Reduce by at least 15% from fiscal 2013		Reduced by 18% from fiscal 2013	○	Reduce by 18% from fiscal 2013	Reduce by 18% from fiscal 2013 (upward revision from initial 15% target)
Basic unit per transport volume ³ (non-consolidated)		Reduce by 1% per year on five-year average ⁴	Increased by 4.5% per year on five-year average ⁴		×	Reduce by 1% per year on five-year average ⁴	Reduce by 1% per year on five-year average ⁴	
 Effective use of resources	Reduce discarded materials emitted from manufacturing	Basic unit per net sales (consolidated)	Reduce by 17% from fiscal 2013	Reduced by 28% from fiscal 2013	○	Reduce by 28% from fiscal 2013	Reduce by 30% from fiscal 2013	
		Reduction rate against BAU (%) ² (consolidated)	Reduce by at least 19% from fiscal 2013	Reduced by 22% from fiscal 2013	○	Reduce by 23% from fiscal 2013	Reduce by 23% from fiscal 2013 (upward revision from initial 20% target)	
	Promote resource recycling	Recycling rate (Japan)	At least 99%	99.1%	○	At least 99%	Maintain at least 99%	
	Manage and respond to water resource risks	Plan progress (%)	Conduct third-party water risk surveys	Conducted surveys at 6 sites	○	Continue water risk surveys, give feedback on survey results to bases	Strengthen actions by production bases for evaluating risks and streamlining water use	

Notes:

¹: Self-evaluation standards for achievement level: ○: Target achieved; ×: Target not achieved

²: Reduction rate against BAU (business as usual) indicates the percentage rate of emissions reduction resulting from implemented actions against a computed value for the hypothetical absence of the actions. By not incorporating the influence of foreign exchange movements and other factors, this indicator allows a direct grasp of the efforts by each site.

³: NGK basic unit per transport volume expresses in metric ton-kilometers the amount of crude oil equivalent fuel used.

⁴: Based on the computation criteria stipulated in the Act on the Rational Use of Energy.

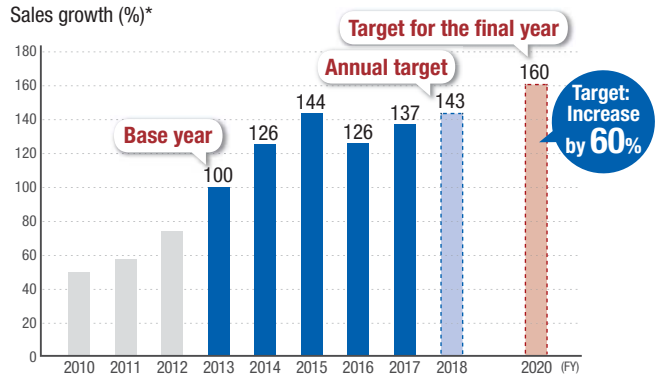
Development and Distribution of Products Contributing to Environmental Protection

The NGK Group considers the provision of products and services that contribute to a better social environment to be one of its most important missions. For nearly a century since its founding, NGK has made use of accumulated technologies to develop and provide products and technologies that reduce impact on the global environment.

For the NGK Group, developing and distributing products contributing to environmental protection is a goal directly connected with our corporate philosophy and is therefore a priority item within the Fourth Five-Year Environmental Action Plan. We aim to achieve a 60% increase in sales of products that contribute to environmental protection compared with figures for fiscal 2013 (and maintain the sales percentage for products contributing to environmental protection at over 50% of all products) by fiscal 2020.

In fiscal 2017, we achieved sales growth of 37% from fiscal 2013, exceeding the annual target of 30%.

Sales growth for products contributing to environmental protection (NGK Group)



Products Contributing to Environmental Protection

HONEYCERAM®

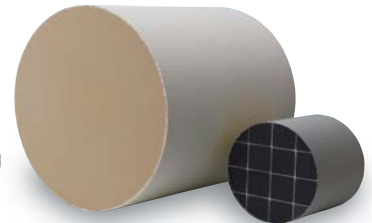
HONEYCERAM is a ceramic substrate for catalytic converters to purify harmful contents in the exhaust of automobiles.

It is currently manufactured in eight countries around the world, with total shipments of around 1.5 billion units.



Diesel particulate filters (DPFs)

The DPF is a porous ceramic filter used worldwide in the exhaust systems of diesel vehicles. Particulate matter (PM) is reliably captured by the filter's micropores, purifying the exhaust emitted from diesel vehicles.



NOx sensors

NGK has developed the world's first in-vehicle sensor to precisely measure concentrations of nitrogen oxides (NOx) in exhaust.



NAS® batteries

NGK was the world's first manufacturer to commercialize the NAS battery megawatt-class storage system. These systems support the proliferation of renewable energy, thereby contributing to the fight against global warming.



Low-level radioactive waste treatment systems

Developed using NGK's proprietary incineration technology and exhaust dust filtration technology, these systems are delivered to nuclear power-related facilities across Japan to safely treat low-level radioactive waste.



Wavelength-control drying systems

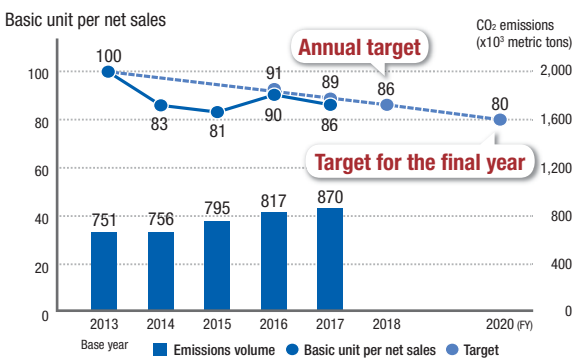
By performing selective irradiation with specific wavelengths of light, this system is able to dry products at a low temperature (approximately 40°C) to control heat damage, thereby contributing to improved product quality and productivity.



Reducing CO₂ and Waste

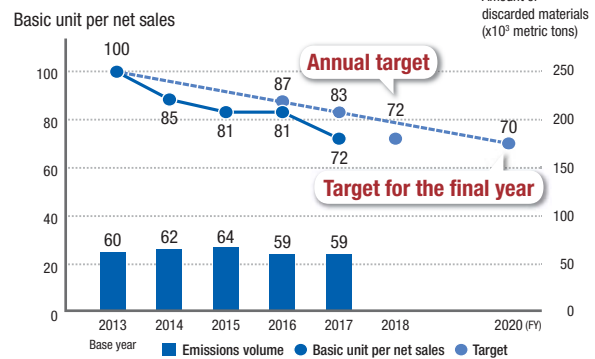
In order to achieve the environmental impact (CO₂ and discarded materials) reduction goals established in the NGK Group's Five-Year Action Plan, all domestic and overseas NGK production sites have developed and administered annual improvement plans corresponding to their own business plans, and this has resulted in steady, cumulative improvement. In fiscal 2017, despite undertaking a number of activities which increased environmental load, such as bringing a new, large-scale factory on line overseas and beginning mass production of new products, the cumulative effect of reduction measures, as well as measures to minimize startup loss, enabled NGK to meet its annual goals. A new factory is being brought on line in Japan in fiscal 2018 as well, but initiatives are underway to ensure we do even better in hitting our Five-Year Action Plan goals.

CO₂ emissions / basic unit per net sales* (NGK Group)



*Basic unit per net sales calculated with the value in fiscal 2013 set at 100.

Amount of discarded materials generated / basic unit per net sales* (NGK Group)



*Basic unit per net sales calculated with the value in fiscal 2013 set at 100.

Protecting Biodiversity

In the NGK Group, we view the challenge of protecting biodiversity as an integral part of achieving a sustainable society, and towards that end we are undertaking the following activities.

Activities for Achieving the Aichi Targets

The NGK Group has been pushing forward with activities pursuant to the Aichi Targets (international goals for biodiversity) agreed upon at the 10th Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 10). In fiscal 2017, we did another biodiversity survey of a company-owned site and began promoting participation in the "My Action Declaration" initiative.

Participating in the "My Action Declaration" Initiative

In fiscal 2017, as a way of raising awareness among employees, we began promoting participation in the "My Action Declaration" initiative led by the Japan Business Federation and the Ministry of the Environment. Declarations were received from around 4,300 employees (97% of all NGK employees) who promised to take a personal interest in and work to protect the biodiversity around them. We are continuing to promote this initiative and working to ensure its horizontal expansion throughout NGK Group companies in Japan.

Aichi Targets	NGK Activities
Target 1 Spread awareness	Employee environmental education, next-generation education, <i>cooperation with suppliers, promoting participation in My Action Declaration initiative</i>
Target 4 Sustainable production and consumption	Expanding sales of products contributing to environmental protection, CO ₂ reduction, effective use of resources, <i>cooperation with suppliers</i>
Target 5 Inhibit loss of all natural habitats	Voluntary employee participation in forestation and other environmental conservation activities, <i>biodiversity survey/appropriate control of company-owned site</i>
Target 8 Control pollution by chemical substances, etc.	Chemical substance management, management of exhaust and wastewater, expanding sales of products that prevent air pollution, <i>cooperation with suppliers</i>
Target 9 Alien species	<i>Biodiversity survey/appropriate control of company-owned site</i>
Target 11 Conserve protected areas	Voluntary employee participation in forestation and other environmental conservation activities
Target 14 Ecosystem services	Voluntary employee participation in forestation and other environmental conservation activities, <i>biodiversity survey/appropriate control of company-owned site</i>

Notes:

- Source: "Guidelines for Action by the E&E Industries Concerning Biodiversity Conservation" (The Biodiversity Working Group, The 4 Electrical and Electronic Industry Associations)
- Red text shows NGK activities that started in fiscal 2016.

Risk Management of Water Resources and Response

Within the NGK Group, we perform water risk assessments for all of our production sites, as well as promote more efficient water usage according to independently established guidelines. With regard to water risk, we utilize public tools to carry out self-assessments at all production sites, and at sites where there are water shortage concerns, we bring in third parties to perform detailed analyses. Although no serious water-related risks have been identified to date at any of our facilities, we will continue to monitor the situation and stay abreast of regulatory trends to ensure stable operations in the future.