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ENVIRONMENT

The increasing global population and the rapid growth of the world economy have complex and diverse connections with the global environment. They can also negatively affect the environment in numerous ways. It is essential to protect the world's irreplaceable natural capital—biodiversity and the air, water and soil that sustain it—for future generations. To balance economic growth with environmental preservation, the automotive industry is tackling a range of sustainability issues. These include climate change and energy measures, preservation of air quality and other natural capital, efficient use of mineral resources, management of chemical substances, resource scarcity and health issues. Companies in the industry are also reforming their business structures to move away from dependence on fossil fuels.

As a global automaker, Nissan takes active steps to identify the direct and indirect environmental effects of its activities, as well as those of its business partners throughout the value chain. The company pursues needed technologies and processes to help minimize the impact of its products on people and communities throughout their lifecycle, while also engaging in communication with society. The company provides customers with innovative products and promotes effective use of energy and resources by increasing sourcing diversity, such as with renewable energy and recycled materials. In this way, Nissan is aiming to achieve its environmental philosophy of “a Symbiosis of People, Vehicles and Nature.”

NISSAN'S ACTIONS

Improvement in corporate average fuel efficiency (fiscal 2016 average in Japan, U.S., Europe and China compared to fiscal 2005):

35%

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ENVIRONMENT

SCORECARD

FY2016 TARGET ACHIEVEMENT RATE: ✓✓ ACHIEVED ✓ MOSTLY ACHIEVED ✗ NOT ACHIEVED

Nissan makes year-round use of the CSR scorecard as a fundamental tool to manage, review and validate its progress in each of the sustainability strategies defined for its CSR activities. The table below shows some of the values behind Nissan's ongoing activities and the indices used in the scorecard to gauge the company's performance.

Nissan Priorities	Nissan Objectives and Long-Term Vision		Indicators of Progress	FY2016 Results	Assessment
Zero-emission vehicle penetration	Achieve 90% reduction in CO ₂ emissions from new vehicles by 2050 (vs. 2000).	Introduce four EVs including Nissan LEAF.	Number of models introduced	Introduced Nissan LEAF, e-NV200, Venucia e30, Choimobi by FY2016	✗
		Prepare to bring fuel-cell electric vehicles (FCEVs) to market.	Results of initiatives	Development underway	✗
		Take global leadership in supplying batteries for electric-drive vehicles.	Results of initiatives	Undertook continuous production of batteries for EVs sold and achieved number-two battery production volume	✓
		Help create zero-emission society utilizing EVs and their derivative technologies with partners.	Results of initiatives	End of the Yokohama Smart City Project, which achieved 25% CO ₂ emission reductions through solar power, Vehicle to Home and EVs	✓✓
		Provide energy storage solution with used EV batteries through "4R" business.	Results of initiatives	Completed necessary preparation for the actual start of sales in JPN with reuse battery in FY17. Reman* business opportunity was found in FY16Q3. Start of Sales is expected in FY17. * Reman : Replacing/refreshing LEAF batteries utilizing remanufactured used packs	✓✓
Fuel-efficient vehicle expansion	Improve CAFE* by 35% from FY2005 (Japan, U.S., Europe, China). * Corporate average fuel economy; meet or exceed regulatory requirements		CAFE	Improved by 36.5%	✓✓
		Introduce top fuel-efficiency models in various classes.	Model introductions	Note e-POWER (Japan) Maxima and Tiida (China)	✓✓
		Introduce front-wheel-drive hybrid vehicles (HEVs) in C class and above; expand rear-wheel-drive HEV offerings.	Model introductions	Serena S-Hybrid (Japan)	✓✓
		Bring plug-in hybrid vehicles (PHEVs) to market.	Model introductions	Development underway	✗
		Introduce next-generation CVT globally; expand CVT sales to 20 million cumulative units from 1992.	Number of CVT-equipped vehicle sales	Annual total: 3.03 million Cumulative total: 25 million	✓✓
		Develop lightweight technologies with structure optimization, new materials and new manufacturing processes.	Results of initiatives	Achieved 2 kg weight reduction through lighter exterior components in Serena (Japan) by using foamed resin on the body side molding. Applied 1.2 gigapascal (GPa) Ultra High Tensile Strength Steel with High Formability to the Murano, Infiniti Q50 and Infiniti Q60 in North America in 2016	✓✓
		Contribute to CO ₂ reduction with ITS technologies.	Results of initiatives	Further expansion of traffic information service to major cities in China	✓✓

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ENVIRONMENT

Nissan Priorities	Nissan Objectives and Long-Term Vision	Indicators of Progress	FY2016 Results	Assessment	
Corporate carbon footprint minimization	Achieve 80% reduction by 2050 (t-CO ₂ /vehicle, vs. 2005).	Reduce CO ₂ emissions of global corporate activities by 20% (t-CO ₂ /vehicle, vs. FY2005).	CO ₂ emission reduction rate	Reduced by 22.3%	✓✓
		Reduce by 27% in all manufacturing sites (t-CO ₂ /vehicle, vs. FY2005).	CO ₂ emission reduction rate	Reduced by 27.0%	✓✓
		Reduce by 6% in logistics (Japan, North America, Europe, China, t-CO ₂ /vehicle, vs. FY2005).	CO ₂ emission reduction rate	Reduced by 8.6%	✓✓
		Reduce by 1%/year in offices (Japan, North America, Europe, China, t-CO ₂ /floor area, vs. FY2010).	CO ₂ emission reduction rate	Increased by 5.8%, mostly due to a revision in the national grid CO ₂ coefficient in Japan	×
		Reduce by 1%/year in dealers (Japan, t-CO ₂ /floor area, vs. FY2010).	CO ₂ emission reduction rate	Increased by 35.8%, mostly due to a revision in the national grid CO ₂ coefficient in Japan	×
Natural resource use minimization	Increase recycled material usage ratio per vehicle by 70% (vs. 2010).	Increase recycled material usage ratio per new vehicle for which production begins in FY2016 by 25% in Japan, U.S. and Europe.	Recycled material usage ratio	Achieved rate of over 25%	✓✓
		Expand closed-loop recycling scheme with business partners.	Results of initiatives	Promoted activities	✓✓
		Improve end-of-life vehicle (ELV) recovery rate: - Achieve top-level ELV recovery rate (Japan). - Promote proper treatment and resource recovery globally.	Recovery rate	99.7% (Japan) Improvement of automotive shredder residue (ASR) recycling rate toward achievement of zero ASR landfill	✓✓
		Reduce scarce resource usage.	Results of initiatives	Expanded adoption of developed magnets with lower rare earth usage; introduced in newly launched Note e-POWER, achieving 70% reduction in magnets (vs. FY2010)	✓✓
		Reduce waste 2%/year in Japan and 1%/year worldwide.	Waste reduction rate	Reduced by 8.9% (Japan) Reduced by 3.0% globally	✓✓
		Promote management and reduction of water usage at all production sites.	Results of initiatives	Promoted activities	✓✓
Environmental management promotion	Promote comprehensive and effective initiatives for supporting management decisions and achievement of Nissan Green Program goals.	Enhance and promote environmental management throughout supply chain (consolidated companies, sales companies, suppliers).	Results of initiatives	Conducted 13 THaNKS* activities in FY2016 * THaNKS: Trusty and Harmonious Nissan Kaizen activity with Suppliers	✓✓
		Promote reduction, substitution and management of environment-impacting substances.	Results of initiatives	Continued enhancing management of environment-impacting substances	✓✓
		Reduce environmental impact of products with lifecycle assessments (LCAs).	Results of initiatives	Continued reducing environmental impact of products	✓✓



▶▶ GRI G4 Indicators
 ▶▶ G4-EN18/G4-EN19/
 G4-EN27/G4-EN28/
 G4-EN33



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ENVIRONMENT-RELATED ACTIVITIES

Environmental Philosophy: A Symbiosis of People, Vehicles and Nature

As a global automaker, Nissan takes active steps to identify the direct and indirect impacts of its business on the environment to help minimize them. The goal is to reduce the environmental impact and resource consumption of Nissan's corporate operations and its vehicles throughout their lifecycle to a level that can be absorbed naturally by the Earth. Toward this end, the company endeavors to leave as small an ecological footprint as possible.

Nissan aims to be a "Sincere Eco-Innovator." The company shows that it is sincere by taking a proactive stance toward addressing environmental challenges, reducing its real-world environmental impact and providing its customers with innovative products, technologies and services as contributions to a sustainable mobility society. It is actively working to contribute to the protection of the global environment through sustainable mobility to achieve "a Symbiosis of People, Vehicles and Nature."

Environmental Action Plan: Nissan Green Program 2016

In fiscal 2011, Nissan launched its six-year environmental action plan, Nissan Green Program 2016 (NGP2016). NGP2016 was based on thorough assessments focusing on factors with critical impact. These assessments included input from energy and resource specialists around the world. NGP2016 also took into account survey results in Japan that help gauge employees' understanding and opinions on environmental issues, Nissan's activities and the company's business priorities.

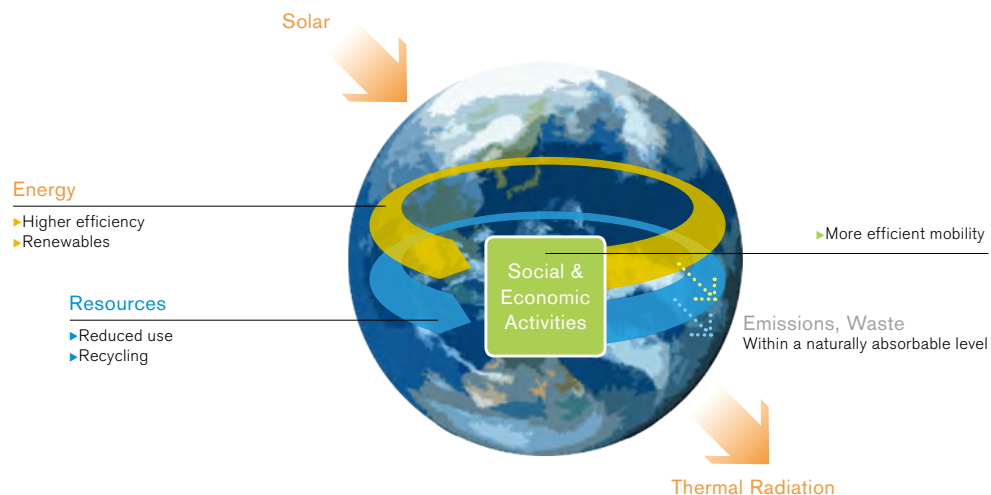
NGP2016 focused on reducing the environmental impact of Nissan's corporate activities and pursuing harmony between resource consumption and ecology. Under this plan, the company aimed to promote diversity and resource circulation by means of efficient use and recycling of both energy and resources, expanding the application of green technologies that were developed under NGP2010, its previous environmental action plan. NGP2016 featured four specific key actions—zero-emission vehicle penetration, fuel-efficient vehicle expansion, corporate carbon footprint minimization and natural resource use minimization—involving activities in

development, manufacturing, sales, service and all other departments.

Thanks to Nissan Green Program activities, the company forecasts that CO₂ emissions from its new vehicles and corporate activities will peak in the 2020s and then subside, even taking into account plans to increase sales globally. The volume of new natural resource use will be maintained at the 2010 level.

► website
Click here for more information on Nissan Green Program 2016.

Promoting Energy and Resource Diversity, Efficiency and Recycling



Based on *Beyond Growth: The Economics of Sustainable Development*, by Herman E. Daly.

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Three Major Issues

Nissan's ultimate goal is to limit the environmental impact and resource consumption of its corporate activities and its vehicles during their entire lifecycle to a level at which the planet can naturally absorb them. Toward this goal, the company pursues activities in three key areas: reducing CO₂ emissions, promoting resource recycling and preserving air, water, soil and biodiversity.

1. Reducing CO₂ Emissions

The business structures of the automobile industry are changing greatly in the face of demand to reduce CO₂ emissions and to move away from dependence on fossil fuels. As a global automaker, Nissan takes into account CO₂ emissions through the whole value chain, including suppliers, from the procurement of raw materials to the transportation and operation of vehicles. Understanding the importance of balancing efforts in this area with its business activities, the company is striving to reduce emissions through such initiatives as developing new technologies and using renewable energy.

2. Resource Recycling

Nissan manufactures and markets its vehicles all around the world, utilizing resources in a variety of forms. With the basic approach of treating resources as limited, believing that they should be used as efficiently as possible and minimizing environmental impact, the company is working to make effective use of resources at every stage of its vehicles' lifecycles so as to sustainably offer the world the rich benefits of mobility.

3. Air, Water, Soil, Biodiversity

Humankind depends upon balanced ecosystems encompassing air, water, soil and living creatures. To help maintain our irreplaceable world in a healthy state for future generations, Nissan is working to minimize its impact on ecosystems through its corporate activities and the lifecycle of its vehicles, making this approach a new part of its values as it continues to develop and champion environmentally friendly technologies.

COMPANY ORGANIZATIONS FOR THE ENVIRONMENT


To achieve the goals of Nissan Green Program 2016 (NGP2016), Nissan has created a global framework for environmental management and is setting targets and implementing closely coordinated action plans across all areas of its activity, from product and vehicle development, manufacturing, distribution, marketing and sales to other divisions.

To carry out its global environmental management, Nissan has established an organizational approach linking its various functions and regions. The Global Environmental Management Committee (G-EMC), which includes a board member as co-chair, meets twice annually. It determines with corporate officers chosen based on issues to be discussed the overall policies and content of reports put before the Board of Directors. The Corporate Strategy and Business Development Division was launched to determine which proposals will be forwarded to the G-EMC and to assign specific actions to each division. This department is also responsible for the efficient management and operation of environmental programs based on the PDCA (plan, do, check, act) cycle.

In addition, Nissan has established committees to implement environmental management and activities at a deeper level in each of its regions. For example, the European Environmental Management Committee was set up in 2012, followed by the Japanese Environmental Management Committee, the North American Environmental Management Committee, and the Chinese Environmental Management Committee in 2013. These groups report to regional management committees and cooperate with the Corporate Strategy and Business Development Division while reporting to the G-EMC.

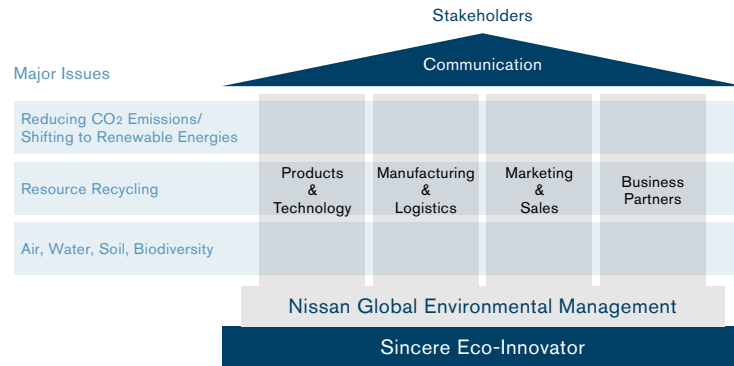
Nissan's strategy is built on the concept of listening to the views of society and identifying potential risks and opportunities. The company takes into account opinions from leading experts and organizations and examines assessments from rating organizations, using this information to analyze its goals and activities and enhance its environmental measures.

Nissan made progress on each of the 4 key action points of NGP2016: "Zero-emission vehicle penetration," "Fuel-efficient vehicle expansion," "Corporate carbon footprint minimization" and "Natural resource use minimization," completing the six-year plan in FY2016. ▶

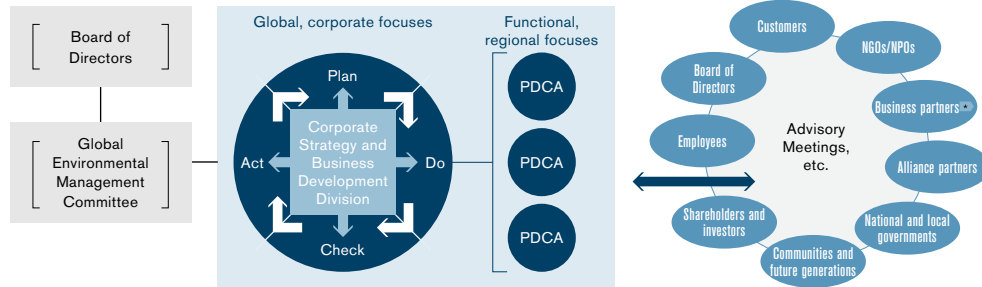
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Nissan's Framework for Global Environmental Management



Environmental Management Organization



Suppliers, distributors, dealers and other third-party entities.

REALIZING THE ENVIRONMENTAL PHILOSOPHY

Stakeholder Engagement

Nissan analyzes its use of resources and energy, the impact on the environment and how it can reduce that impact throughout the value chain. Through these analyses, the company identifies stakeholders at each stage, from the extraction of resources needed to make vehicles to manufacturing, shipping, using and disposing of end-of-life vehicles. Through a broad range of approaches, Nissan gains an understanding of stakeholder views and the diverse needs of society.

As one example, members of Nissan's Board of Directors hold meetings with the participation of researchers and experts who lead the environmental field in the academic and industrial worlds, as well as leading businesspeople from various sectors. They discuss the direction and appropriateness of Nissan's business strategies; this input is considered in those strategies going forward.

Customers, shareholders, investors, Alliance partners, business partners, NGOs/NPOs, local communities, national and local governments, future generations, employees and members of Nissan's Board of Directors.

Materiality Assessment

The automotive industry is subject to environmental regulations and standards around the world, covering areas like CO₂ and other exhaust emissions, energy, fuel efficiency, noise, material resources, water, chemical substances, waste and recycling.

As regulations become more stringent each year, consumer needs and interests concerning environmental performance are also changing.

To meet these demands, Nissan uses materiality assessments to analyze potential opportunities and risks. The company identifies those priority issues viewed by both Nissan and stakeholders as important, sets necessary policies and targets for tackling them effectively and works them into its environmental strategy.

For the results of the company's materiality assessments, see the Materiality Matrix.

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Enhancing Environmental Management Based on ISO 14001

As of January 2011, the Nissan Global Headquarters and all other main Nissan facilities in Japan, including those for R&D, production and logistics, along with all product development processes, have acquired ISO 14001 certification for environmental management systems. The company has appointed an environmental management officer to oversee Nissan's environmental activities. Through steady application of the PDCA (plan, do, check, act) cycle, the company is improving its environmental performance. The coordinated goals set by the environmental management officer for the entire company are cascaded down to the employees working in all facilities through local offices.

Nissan's ISO secretariat oversees companywide efforts, while the local offices in Japan are responsible for activities at each facility and division and for coordinating the proposals from employees. The secretariat and local offices engage in discussions at least once a month to confirm the progress made toward established goals, to share best practices, to improve management systems, to develop plans for the next fiscal year and to communicate requests from local facilities and divisions. The items discussed are reported to the environmental management officer twice a year (once during the management review conference) so that the company can decide on needed improvements.

To confirm management is functioning properly, Nissan annually undergoes audits by third-party organizations and carries out its own internal audits of its environmental systems and environmental performance to strengthen the company's measures, based on the PDCA cycle. Nissan has finished adapting its systems in line with the version of ISO 14001 updated in fiscal 2015.

The company has also earned ISO 14001 certification at its main production plants outside Japan. Nissan's policy is to extend environmental management systems to all regions of new expansion, applying these same criteria.

Product Development Policy

Nissan has introduced an environmental component to the traditional quality, cost and time (QCT). With this QCT-E approach, Nissan has crafted a global approach to environmental management, thereby setting targets for environmental performance in all areas of its business.

Under NGP2016, the company's environmental action plan, Nissan annually invests 70% of its research and advanced engineering budget in environmental technologies. The company is also promoting its Common Module Family concept, sharing platforms and module components with its Alliance partner Renault. Savings from reduced costs are invested in new solutions, including cutting-edge environmental technologies.

Raising Employee Awareness

Nissan's environmental activities are enabled by the knowledge, awareness and competency of its employees. Based on ISO 14001 activities, the company conducts employee education rooted in NGP2016 regarding reduction of CO₂ emissions, energy and water consumption and waste. In addition, education regarding environmental accident prevention, including management of hazardous materials, is provided every year to all employees, including those from affiliated companies working in Nissan production facilities. At production plants, ongoing improvements of employee competency to reduce environmental impact are promoted through not only education and training programs but also the quantitative evaluation of each employee. The content of these training programs is updated once a year.

In Japan, Nissan implements its own curriculum for educating new employees during orientation as well as midranking and management personnel during seminars to deepen their understanding of NGP2016 and environmental issues surrounding the auto industry. The company also holds "town hall" meetings that bring together executives and employees. Employees can stay up to date on Nissan's latest environmental initiatives through features in the intranet, internal newsletters, and in-house video broadcasts. In addition, all employees receive an Environmental Policy Card with a pledge to pursue personal environmental activities, which they carry at all times.

Overseas, Nissan shares information and provides education to employees through the intranet, videos, events and various other communication approaches suited to each region.

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Employee-Initiated Activities and Evaluation System

In fiscal 2008, Nissan added the “environment” factor to the range of *kaizen* activities carried out by quality-control (QC) circles. This creates a mechanism that encourages employees to think proactively and propose ideas to improve environmental aspects of Nissan’s business. Managers encourage employees’ active participation by communicating how these QC circle activities are linked to achievement of the goals in the company’s midterm business plan. The ideas proposed by employees go to managers and QC circle secretariats for assessment of their potential contribution to environmental improvement, among other factors, after which Nissan may implement those with the highest potential.

The knowledge and skills of the frontline employees on CO₂ emission reduction, energy management, water conservation and waste and landfill reduction have been compiled in a best-practices manual and shared among global facilities. A system to reduce cooling-tower water use was born from this activity. Nissan also holds contests in some facilities during officially designated months in Japan to keep employees motivated to participate in environmental activities. These include the Energy Use Reduction Idea Contest in February (energy-efficiency month), the Water Usage Reduction Idea Contest in June (environment month) and the Waste Reduction Idea Contest in October (3R promotion month).

Nissan uses various methods to reward employees for their contributions to environmental improvement activities. One is inclusion of these activities in the “commitment and target” annual performance goals used at some Japanese and overseas locations. This system assesses employees’ achievement of goals, reflecting this in performance-related elements of bonuses. Employees are also recognized for environmental improvement through Nissan Prizes presented by the CEO or other executives, awards given by plant heads and “THANKS CARD” recognition from managers for excellent work or achievements.

Working with Consolidated Production Companies

Nissan encourages its consolidated production companies in a variety of markets to acquire ISO 14001 certification and to undertake other environmental initiatives based on their respective policies. Meetings with major consolidated production companies in Japan are held to exchange views on cooperation toward the goals outlined in NGP2016. The meetings lead to a deeper shared understanding of the details of NGP2016 and the initiatives undertaken by each company.


Working with Dealerships

Nissan’s dealerships in Japan have introduced an original approach to environmental management based on ISO 14001 certification called the Nissan Green Shop certification system. This system is managed through internal audits conducted by the dealerships every six months, in addition to regular annual reviews and certification renewal audits carried out every three years by Nissan Motor Co., Ltd. As of the end of March 2017, the system has certified 2,700 outlets of 157 dealers, including parts dealers.

Working with Suppliers

The purchasing divisions of Nissan and Renault ensure full understanding of CSR and compliance with regulations in the supply chain through *The Renault-Nissan Purchasing Way* and the *Renault-Nissan CSR Guidelines for Suppliers*. In the environmental aspect, they carry out supply-chain management in line with the Nissan Green Purchasing Guidelines.

Based on NGP2016, Nissan holds regular annual environmental briefing sessions for suppliers when it fully shares targets, action plans and understanding of what constitutes environmental impact. Since fiscal 2012, it has conducted surveys to gather information from suppliers on their environmental performance in areas including CO₂ emission levels, water use and waste. In fiscal 2014, Nissan further expanded its activities by adopting the supply-chain program run by CDP, an international nonprofit organization that manages a global system for disclosure of companies’ environmental impact and strategies. In fiscal 2016, it worked to improve the accuracy of performance data with the cooperation of CDP and other external specialists. Further, the company institutes mandatory questionnaires concerning handling of environment-impacting substances and environmental management when selecting each supplier.

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Click here for more information on supply-chain management.

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Communication and Assessment of Environment-Related Activities

Companies today are called upon to disclose a wide range of information about how they are managing risks and handling issues related to such environmental issues as climate change and natural resources. Nissan makes detailed disclosure of its environmental performance on its website for stakeholders, including investors, rating agencies and other specialists, in accordance with Global Reporting Initiative (GRI) guidelines. Among data disclosed are CO₂ emission and waste discharge levels, as well as the amount of energy, water, materials and other resources consumed. Nissan's communication efforts also include briefings to describe its environmental initiatives.

Nissan was selected from among more than 6,000 global corporations for inclusion on the Climate A List in the Global Climate Change Report 2016 issued by CDP, becoming the only Japanese automotive company chosen for the third consecutive year. This selection recognized Nissan's efforts based on the environmental philosophy of "a Symbiosis of People, Vehicles and Nature" not only to reduce CO₂ emissions from its corporate activities but also to reduce "well-to-wheel" CO₂ emissions from new vehicles by 90% by the year 2050 (compared with levels from 2000) under a long-term vision established a decade previously. Its transparent disclosure of environmental information was another factor in its selection.

Nissan was also named to the Climate A List for its comprehensive efforts toward building a zero-emission society. These include championing the Nissan LEAF and other zero-emission vehicles, developing the LEAF to Home system that lets Nissan LEAF owners use energy stored in the vehicles' batteries to power their homes, implementing renewable energy solutions making use of used batteries and cooperating with other companies and local authorities to establish widely available charging infrastructure.

CDP also assesses corporations' water-related initiatives. Nissan scored at a leadership level in this area, receiving high praise for its NGP2016 initiatives to reduce water usage and manage its supply chain.

Nissan was also selected as a global leader on the World Index of the Dow Jones Sustainability Index, an index managed by the U.S. firm Dow Jones & Company, Inc. and the Swiss socially responsible investment

research firm RobecoSAM AG. Nissan received particular recognition for its initiatives promoting zero-emission vehicles and fuel-efficient vehicle expansion and for its reduction of workplace CO₂ emissions. As a result, Nissan scored top marks in four out of six criteria, being rated one of the top companies in its industry for environmental activities.

For the second consecutive year, the company also finished second in the manufacturing sector and first in automobile manufacturing in the Nikkei Environmental Management Survey. The survey, conducted by Nikkei Inc. for the 20th time last year, examines and evaluates how Japanese corporations balance business concerns with environmental policies, assessing the performance of 1,733 companies in the manufacturing sector and 1,429 companies in nonmanufacturing industries, including retail, restaurants, power and gas and construction. Nissan achieved a total score of 490 points out of a maximum of 500 across five categories, receiving a perfect score in the product measures and environmental management promotion categories.

This result was the fruit of implementation of NGP2016—which extends to sales and service divisions as well as development, manufacturing and purchasing—and ongoing *kaizen* activities. The survey in particular praised increases in Nissan LEAF sales and activities to reduce end-of-life waste disposal.

Lifecycle Assessment to Reduce Environmental Impact

Nissan uses the lifecycle assessment (LCA) method to evaluate and comprehensively assess environmental impact in all stages of the vehicle lifecycle, from resource extraction to production, transport, customer use and vehicle disposal. LCAs are also carried out for new technologies as they are introduced with the goal of developing more environmentally friendly vehicles.

Company calculations show that over its lifecycle, the Nissan LEAF produces CO₂ emissions up to 40% lower than gasoline-powered vehicles of the same class. In 2010, this assessment was certified by the Japan Environmental Management Association for Industry. Nissan has continued to conduct LCAs in line with development of the vehicle.

These international guidelines, published by the NGO Global Reporting Initiative, promote actions by companies to define overall policy direction toward environmental, social and economic development and to disclose information on their overall plans and specific initiatives.

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For details on the LCA for the Nissan LEAF, see the CSR data section in this report.

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In December 2013, TÜV Rheinland in Germany also certified Nissan's LCA methodology. This certification is based on ISO 14040/14044 standards and guarantees the soundness of the environmental impact calculations in Nissan's product LCAs. Nissan bases LCAs for new vehicles on its certified methodology; the company's certification was renewed in fiscal 2016. The company continues to lower its vehicles' environmental impact by adopting new technologies and more efficient processes in manufacturing, aiming for further CO₂ emission reductions over the lifecycle of its new vehicles.

TÜV Rheinland certificate



REDUCING CO₂ EMISSIONS

The United Nations Framework Convention on Climate Change states that to stabilize the climate system it is necessary to keep average temperatures from rising more than 2 degrees Celsius on a global basis. Based on this assumption, Nissan has calculated that "well-to-wheel" CO₂ emissions for new vehicles will need to be reduced by 90% by 2050 compared with levels in 2000. The efficiency of internal combustion engines will need to improve in the short term to help achieve this. Over the long term, Nissan also aims

to increase the adoption of zero-emission vehicles—battery electric and fuel-cell electric (EVs and FCEVs)—and to promote the use of renewable energy to power these technologies.

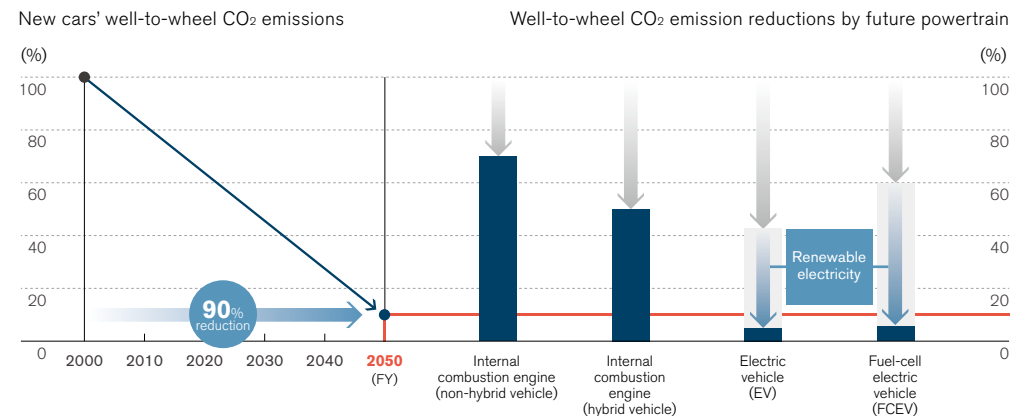
Nissan is advancing technological development on the basis of a zero-emission future scenario. Specifically, the company is concentrating its efforts on two pillars: zero emission, which involves widespread use of zero-emission vehicles in a holistic approach to promote a sustainable society; and PURE DRIVE, which reduces CO₂ emissions by developing fuel-efficient internal combustion engine technologies and introducing them to the market.

Nissan has also calculated that it needs to reduce CO₂ emissions from its corporate activities by 80% by 2050 compared with 2005 levels. Accordingly, it plans to continue its energy efficiency measures, leverage the energy storage ability of EV batteries and expand its use of renewable energy.

▶▶ page_34

▶ Click here for more information on PURE DRIVE.

Our CO₂ Reduction Scenario



▶ Created by Nissan on the basis of the Intergovernmental Panel on Climate Change Fourth Assessment Report.

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ZERO-EMISSION VEHICLE PENETRATION

Electric vehicles (EVs) demonstrate that what is good for drivers and the planet is also good for business. Nissan, including its Alliance with Renault, is engaged in a comprehensive approach that involves boosting production and sales of EVs and other activities coordinated in a variety of partnerships for popularization of EVs.

Zero-Emission Leadership for the Alliance

Nissan's commitment to sustainable mobility addresses concerns over climate change and supports sustainable profits for Nissan while satisfying customers' demands for more environmentally friendly vehicles. Greater use of renewable energy, such as solar, wind and hydropower, in the future will continue to improve EVs' environmental contribution as electricity generation becomes cleaner. Increased use of batteries as energy storage devices will also expand the EV market as they can be reused after their initial use for transportation power.

In 2010, Nissan began sales of its mass-produced 100% electric vehicle, the Nissan LEAF. In 2014, Nissan expanded its leadership in zero-emission mobility into the LCV segment with the launch of the e-NV200, the company's second all-electric vehicle, in the European and Japanese markets. As of 2015, the new Nissan LEAF—powered by a 30-kWh lithium-ion battery that makes possible a driving range of 280 kilometers in JC08 mode—was on sale in Japan, North America and Europe.

Nissan LEAF Sales Exceed 260,000

The Nissan LEAF is powered by a lithium-ion battery pack and an electric motor, and it emits no CO₂ or other exhaust emissions during operation. The Nissan LEAF offers excellent, fun-to-drive performance, with smooth, strong acceleration and quiet delivery across a speed range comparable to that of other models, as well as great handling stability realized by well-balanced weight distribution. This all-new driving experience has earned the Nissan LEAF high marks from customers since its debut in 2010.

The Nissan LEAF has been introduced in 48 markets to date, with sales steadily increasing. Total cumulative sales worldwide exceeded 260,000 vehicles as of March 2017, maintaining the Nissan LEAF's position as the best-selling EV in the world. Across all EV models, including

the e-NV200 and the Venucia e30, cumulative global sales have cleared the 300,000 mark. While the low environmental impact of EVs is attractive, consumer awareness of other characteristics, such as the low charging and operation costs and superior acceleration and steering performance, is likely to have been a factor in the strong sales.



The Nissan LEAF.

The Nissan LEAF also has advanced features specially developed for customer convenience. Advanced IT systems allow the driver to control functions such as the vehicle air-conditioning system and EV charging remotely, via a smartphone or other device, and can help the driver find nearby charging stations and the most energy-efficient routes.

Nissan has worked with local governments, corporations and other entities to deploy charging infrastructure and encourage adoption of EVs. The company has also established a Global Data Center to collect EV performance data from different countries, which is used to analyze driving and charging patterns. Nissan aims to leverage its valuable experience gained in different markets to further improve customer convenience.

The company's calculations show that the Nissan LEAF and other EVs produce considerably less CO₂ emissions over their entire lifecycle, from the extraction of raw materials, manufacturing, shipping and use to end-of-life disposal, compared to gasoline-powered vehicles of the same class. ▶

By contributing to the shift to renewable energy, EVs play an essential role beyond transportation to help achieve a low-carbon society.

▶▶ [page_24](#)

▶ Click here for more information on the Nissan LEAF lifecycle assessment.

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The e-NV200, a Practical, Sustainable City Delivery Vehicle

Based on the Nissan NV200, a multipurpose commercial van, the e-NV200 combines the interior roominess and versatility of the NV200 with the acceleration performance and refinement of an EV. It has been produced at Nissan's Barcelona Plant in Spain since June 2014 and, as of March 2017, is sold in 26 countries, including Japan and a number of European nations. The e-NV200 is also used by taxi services in Barcelona and Amsterdam and has been adopted in Japan by a wide range of customers from urban delivery businesses to local authorities.

Compared to commercial vehicles using internal combustion engines, the e-NV200 reduces operating costs and contributes to an enhanced environmental image thanks to the vehicle's zero exhaust emissions and reduced noise pollution. Additionally, the vehicle offers smooth, strong acceleration performance while being extremely quiet.

The inclusion of a hydraulic brake system makes the vehicle's regenerative braking more effective, enabling a driving range of 185 to 190 kilometers on a full charge (in JC08 mode). Two 100-volt power outlets that can draw a maximum of 1,500 watts of power from the battery are installed in the front-seat side and the cargo area (Japan model). They provide a convenient and safe electrical power source that comes in handy for offsite jobs, outdoor events and construction work, or in the case of an emergency.

The driver can also manually set the remaining battery level. By halting the power supply automatically with anything from 2 to 11 of 12 bars remaining on the battery gauge, the driver can ensure that the vehicle has enough energy left in the main battery pack for the ride home.

Construction companies that have adopted the e-NV200 as a power source for onsite work have given positive feedback. Because they now do not use fuel-powered generators, noise is reduced around the site, and efficiency is improved due to better communication.

With five-seat and seven-seat wagon versions available, the vehicles can also be used for carrying passengers.



As a mobile power source, the e-NV200 has potential for application in a range of business contexts.



The e-NV200 gives Japanese and European urban goods delivery and taxi businesses the opportunity for zero-emission operations.

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e-NV200 Vehicles Put to Various Uses in Japanese Municipalities

The e-NV200 is extremely quiet and can be used as a mobile power source in the outdoors during emergencies. Starting from the end of fiscal 2015, Nissan is making some of these vehicles available free of charge on a three-year lease to Japanese municipalities that have identified applications making the best use of the vehicle's potential. Through this approach of building a track record of innovative EV uses, the company aims to collect examples of ways to put the e-NV200's strengths to work, sharing them nationwide and thereby helping to increase EVs' presence in the market. The examples can be categorized broadly into four types, depending on which EV benefit they focus on: their eco-friendliness, quiet operation, affordability or role as a mobile power source.

In Tochigi Prefecture, large-scale producers of flowers and other crops are taking advantage of the spacious cargo area for their deliveries. By using a small hydroelectric facility to produce electricity for use in vehicle charging, operating costs can be significantly reduced. The vehicle's battery pack can also be used in greenhouses and as an emergency backup power supply.

At the Nishi Ward municipal office in Yokohama, Kanagawa Prefecture, an e-NV200 is being used to transport food samples in a program to prevent food poisoning and infection. A refrigerator unit plugged into the cargo outlet makes it possible to transport the samples at a stable temperature. The vehicle is also used during outdoor hygiene education events at different locations.

The Child-Raising Division in Iwakura, Aichi Prefecture, uses an e-NV200 to take children from a small daycare center by the station to their different nurseries. Children and nurses can enjoy the journey as they can talk without being disturbed by the noise of the vehicle engine or smell of gasoline. The vehicle also acts as a power supply for acoustic equipment and microphones used at sports days and other events.

The New Energy Industries Division in the city of Osaka uses its e-NV200 in environmental surveys, including monitoring aircraft noise. As well as transporting all equipment, the vehicle acts as a power source at survey locations.

The e-NV200 also helps support local communities. For example, in the Aba District of Tsuyama, Okayama Prefecture, there are few gas stations and communities are isolated. The introduction of this vehicle has reduced running costs of a program that transports elderly residents who cannot drive by themselves for shopping and other activities. In Okinawa, meanwhile, an e-NV200 is used as a shuttle bus in the Okinawa Peace Memorial Park by the foundation operating the park. With no emissions or noise, the vehicle contributes to protecting the natural environment.

Fuel-Cell Electric Vehicles

Fuel-cell electric vehicles (FCEVs) are another type of zero-emission vehicle that do not produce CO₂ or other harmful emissions. Powered by electricity generated from hydrogen and oxygen, FCEVs emit only water during their operation. Nissan believes that in building a sustainable mobility society, both FCEVs and EVs are important from an energy diversity perspective.

In 2013, Daimler AG, Ford Motor Co. and Nissan, under the Alliance with Renault, signed an agreement for the joint development of a common fuel-cell system. Toyota Motor Corp., Honda Motor Co. and Nissan are participating in a Japanese government initiative to develop hydrogen station infrastructure in Japan. In addition to partially covering the operating costs of hydrogen stations, the three automakers are working to entice new infrastructure companies to enter the business by sharing information about their support for it.

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Pursuing a Zero-Emission Society

The widespread use of zero-emission vehicles, which produce no CO₂ emissions during operation, is an effective way of achieving sustainable mobility. The auto industry must go beyond producing and selling zero-emission vehicles to help put the necessary infrastructure in place to ensure that the vehicles are economical to use. No company can achieve this on its own. The Renault-Nissan Alliance is promoting the development and production of zero-emission vehicles and the construction of infrastructure, forging numerous zero-emission partnerships with national and local

governments, electric power companies and other organizations.

Nissan is also taking part in a comprehensive range of initiatives focusing on zero-emission mobility, including the production of lithium-ion batteries, secondary use and recycling of batteries, construction of vehicle-charging infrastructure and standardization of charging methods with other manufacturers. Increased uptake of zero-emission vehicles will bring changes to people's lifestyles, laying the groundwork for a sustainable mobility society. Nissan provides more than just EVs themselves; it embraces the new values that they represent as well.

Building a Zero-Emission Society with EVs



CHAdeMO, an organization established to increase installations of the quick chargers that are indispensable for the further diffusion of electric vehicles and standardization of charging equipment, is made up of automakers, electric utilities, charger manufacturers, charging service providers and other supporting groups.

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▶ Based on the time it takes to charge both 30 kWh and 24 kWh batteries to 80% of capacity from when the battery warning light comes on. Charging times can vary according to the type of quick charging unit and environmental temperature.

Providing Infrastructure to Support Zero-Emission Vehicles

Quick chargers, which can charge batteries from a minimum charge up to 80% capacity in around 30 minutes, ▶ are a key part of the infrastructure needed for the widespread adoption of EVs. Nissan launched its quick chargers in 2011, and in the following year, the company improved them to make chargers quieter and the connector easier to use, as well as enabling on-the-spot payment. Nissan produced them until November 2015, providing global hardware support for charging infrastructure.

Nissan is encouraging local governments, public and commercial facilities and others in Japan to install quick chargers. It is also continuing to increase the number of Japanese Nissan dealerships with quick chargers, which stood at 1,800 as of March 2017.

In May 2014, Nissan jointly established a new company, Nippon Charge Service (NCS), with other Japanese automotive manufacturers to promote installation of chargers for electric-powered vehicles (including EVs and plug-in hybrid vehicles). Under NCS management, the companies aim to provide a convenient charging network service letting drivers charge their vehicles anywhere with a single card.

Nissan has also started working with companies that support the spread of EVs by installing EV chargers at their workplaces to make it easier for employees to commute using the Nissan LEAF.

The company offers the Nissan Zero-Emission Support Program 2 to make it more convenient for customers across Japan to operate their EVs. A set monthly membership fee gives them unlimited access to almost all quick-charging points in Japan. This contributes to lowering running costs by reducing the cost of charging EVs at home.

In the United States, Nissan runs the “No Charge to Charge” program, which provides free access to selected charging stations for two years with the purchase or lease of a new Nissan LEAF. As of March 2017, the program is running in 51 cities where Nissan LEAF sales are high, including San Francisco, Los Angeles, Seattle and Portland, Oregon, and the company plans to expand to more cities in the future.

In Europe, too, Nissan is working with companies in the energy industry and others to install quick chargers compliant with the CHAdeMO protocol. It is also collaborating with BMW to encourage the spread of EVs and PHEVs by boosting the number of quick-charging stations that can be used by vehicles from both companies. In the United States, as of January 2017,

a total of 174 stations had been built in 33 states, and there are plans to complete another 50 during the 2017 calendar year.

As of the end of February 2017 there were 14,000 CHAdeMO-compliant quick chargers worldwide.

Expanding EV Usage in California

California has been actively promoting zero-emission vehicles and has successfully become the number-one EV selling state in the U.S.. At the same time, drivers are only using EVs for short distance travel such as shopping or commuting. Entrusted by Japan's New Energy and Industrial Technology Development Organization (NEDO) and with the California government's cooperation, Nissan Motor Co., Ltd., and Kanematsu Corp., in partnership with U.S. charging infrastructure service provider EVgo, started a project in November 2016 by installing over 50 chargers in more than 20 locations along one of California's most important travel arteries while studying EV use and driving patterns through a smartphone app that provides a user-friendly charging experience. The data collection and analysis will continue until September 2020 and the results will be utilized for further EV market expansion.

Nissan EVs: Contributing to Realization of Smart Grids

Nissan EVs can provide electricity to households through the Power Control System. The LEAF to Home power supply system lets a Nissan EV share the electricity stored in its high-capacity lithium-ion batteries with an ordinary home once the car is connected to the home's electricity distribution panel via its quick-charging port. In this way EV batteries can provide additional value. The connector conforms to CHAdeMO, a fast-charging protocol used in global markets where Nissan EVs are sold, and ensures a high level of versatility, stability and reliability.

Integration of EVs into society will help energy distribution across the grid. Today, about 5,800 households in Japan are utilizing EVs to manage home energy use through a vehicle-to-home scheme, and using a similar vehicle-to-building approach, hundreds of EVs are powering buildings in the U.S., Japan and Europe.

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On the Hawaiian island of Maui, about 600 Nissan LEAF owners volunteered to participate in the Japan-U.S. Island Grid Project, also called "JUMPSmart Maui." This vehicle-to-grid initiative is exploring the potential of integrating a smart energy grid, renewable energy and EV technology in a single energy management system. Residents can access renewable energy from wind and solar sources for vehicle charging, reducing their operating cost. In return, they provide the electricity stored in their EVs to the grid as part of efforts to optimize electricity supply across the island.

Production of Lithium-Ion Batteries in Japan and Abroad

In Japan, NEC Corp. and Nissan's joint-venture company, Automotive Energy Supply Corp., produces lithium-ion batteries for Nissan EVs at its Zama facility. The facility assembles modules consisting of multiple sheet cells packed into compact metal cases with attached terminals. These are put together in battery packs at Nissan's Oppama Plant and then fitted into vehicles.

Nissan also manufactures the Nissan LEAF and EV batteries overseas. In the United States, the company has produced lithium-ion batteries at its Battery Plant and EVs at its Vehicle Assembly Plant in Smyrna, Tennessee, and also in the United Kingdom at its Sunderland Plant.

The Nissan New Mobility Concept

The Nissan New Mobility Concept is an ultracompact 100% electric vehicle that was developed in response to rising numbers of senior citizens and single-member households, along with increasing use of automobiles for short-distance trips by up to two people. Even smaller than a "kei" minicar, the driver has excellent visibility and a good feel for the dimensions of the vehicle, making it an ideal choice for residential neighborhoods and other areas with narrow streets and poor visibility, as well as regional cities and islands pursuing compact-city policies.

Since fiscal 2011, with cooperation from Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLIT), Nissan has held driving trials together with corporations and local governments to conduct tests and

surveys. Following the MLIT's January 2013 announcement of an authorization system for use of ultracompact vehicles on public roads, Nissan is currently testing vehicles in 22 areas. To date, the vehicles have mainly been used for tourist purposes as part of regional revitalization, but they are now being applied to a broader range of purposes in different locations. For example, in Tokyo's Koto Ward, the municipal office is using them as official cars, while an electrical construction company with its head office in the ward's Toyosu district uses them to transport people between business locations. In Okinawa Prefecture, meanwhile, a bank uses them as commercial vehicles. From October 2013 to September 2015, Nissan conducted "Choimobi Yokohama," Japan's first public test of a one-way car-sharing service, using the Nissan New Mobility Concept in Yokohama, Kanagawa Prefecture. Building on the insight gained from this test, the company launched a new "Choimobi Yokohama" initiative in March 2017. By providing the service for tourists visiting local destinations or area businesses making use of it in their daily activities, Nissan aims to establish this as a sustainable business model built around ultracompact mobility solutions.

Nissan fully leverages the knowledge and information acquired from all its nationwide projects, offering advice on new uses for EVs and ways to improve traffic flow and implementing smart mobility for the next generation.



The "Choimobi Yokohama" service using the Nissan New Mobility Concept.

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Joint Venture to Promote Second-Life Use for Batteries

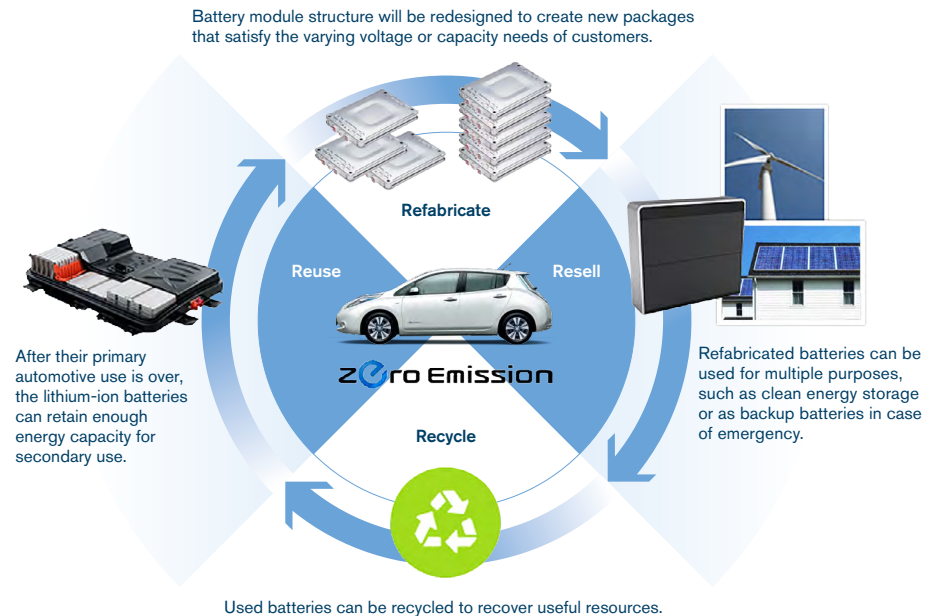
Lithium-ion batteries used in Nissan's EVs retain capacity well beyond the useful life of the vehicles themselves. The "4R" business model—which reuses, resells, refabricates and recycles lithium-ion batteries—allows their effective use for energy storage solutions in a range of applications, thus creating a much more efficient energy cycle of battery use.

As the EV market expands, Nissan sees a need to utilize reusable lithium-ion batteries more effectively. In 2010, it launched 4R Energy Corp., a joint venture with Sumitomo Corp. This company is developing and testing to use EV batteries as part of a stationary energy storage system. Japan is expected to see rising demand for such systems as part of energy storage and backup power systems that also feature solar panels on homes or business structures, and 4R Energy has already started sales of them for houses and apartment buildings.

4R Energy is actively developing a range of storage systems built with used Nissan LEAF lithium-ion batteries. In addition to conducting an ongoing experiment with a large-capacity storage system in Osaka's Konohana Ward since 2014, it expanded its activities in November 2015 by launching a power system stabilizer test in Satsumasendai, Kagoshima Prefecture. It has also started testing a small-capacity storage system at a commercial facility in Okinawa Prefecture, refining its performance assessment for used module units and selection standard technologies. In July 2015, the Nissan Advanced Technology Center adopted an energy management system built from 24 used Nissan LEAF batteries.

In addition to in Japan, Nissan is extensively involved with 4R activities in the United States.

4R Concept



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Used EV Battery Sales for Households Launched in Europe

Nissan has launched “second life” initiatives to extend use of its EV lithium-ion batteries. In Europe, it has joined with multinational power management company Eaton Corp. to launch sales of xStorage Home, a residential home energy system. Because the system is built around used EV batteries, it can be offered at a lower price. However, customers can also opt to purchase an xStorage Home unit that uses new Nissan EV batteries. xStorage Home allows owners to store energy purchased from the power grid during the cheapest hours of the day, as well as solar power generated during the daytime. This can then be used in the home during peak times when energy prices increase. The xStorage Home unit also has the capability to provide energy back to the grid in countries where the conditions enable customers to do so. This provides another potential revenue stream as customers will be able to sell stored energy back to the grid when demand and costs are high. The systems, available in six configurations, are designed to meet diverse customer needs, with features including simple remote operation and monitoring via a dedicated smartphone app.

A business version—xStorage Building—makes it possible for corporations with high energy consumption to manage their usage and supply power for their own activities more sustainably and intelligently. In November 2016, Nissan and Eaton signed a 10-year contract with Amsterdam ArenA to provide used Nissan LEAF batteries for backup power uses. The globally renowned entertainment venue is the home stadium of soccer team Ajax Amsterdam and has hosted many famous concerts and sporting events over the years. With the introduction of xStorage Building, there will be no more concerns about power cuts at the 55,000-capacity facility.

PROMOTING ELECTRIFICATION

Borrowing from technology for the main parts of its EVs, Nissan is promoting electrification technologies that can be applied to infrastructure in a variety of markets.

100% Electric-Motor-Powered Drivetrain e-POWER Incorporated in Note

In November 2016, Nissan launched the new compact Note e-POWER including an innovative new drive system. This system, called e-POWER, is a 100% electric powertrain making use of EV technology in the Nissan LEAF. A gasoline engine is used to charge the batteries, which provide power to the electric motors that drive the wheels of the Note e-POWER. Thanks to this full-electric motor drive system, drivers can enjoy the powerful, responsive acceleration and excellent quietness in various settings and driving environments.

As with other gasoline-powered and hybrid cars, the Note e-POWER uses gasoline as its power source, removing the need to charge the battery. Driven completely by electric motors, it offers driving pleasure equivalent to that of an EV, making it a vehicle with an all-new electric powertrain completely different from the hybrid systems commonly included in compact cars to date.

As the gasoline engine does not directly drive the wheels, it can be run at its optimal speed at all times to generate electricity. In city driving, where this vehicle is expected to see frequent use, the Note e-POWER achieves top-class fuel efficiency compared with standard hybrid vehicle types.

As of time of sale, as measured by Japanese fuel-efficiency standards: Note e-POWER S, 37.2 km/L.

New e-Bio Fuel-Cell Technology Announcement

In June 2016, Nissan announced that it is currently researching and developing an e-Bio Fuel-Cell system that runs on bio-ethanol electric power. The new system—a world first for automotive use—features a solid oxide fuel-cell (SOFC) power generator. SOFC technology can utilize the reaction of multiple fuels, including ethanol and natural gas, with oxygen to produce electricity with high efficiency.

Infrastructure to support e-Bio Fuel-Cell usage is relatively easy to roll out, and vehicles using this technology feature running costs as low as those for EVs, allowing smooth introduction to the market. Because it combines the efficient electricity generation of SOFC with the high energy density of liquid fuels, it can enable driving ranges on a par with gasoline-

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powered vehicles. Commercial users that require higher uptime for their vehicles should increasingly be able to take advantage of this solution thanks to the short refueling times it offers.

Progress in Plug-in Hybrid Vehicles

Plug-in hybrid electric vehicles (PHEVs) are hybrid cars that can be charged from an external source in addition to relying on electricity generated by their engines. Nissan is developing PHEVs using Alliance technologies with a view to launching them in the future.

FUEL-EFFICIENT VEHICLE EXPANSION

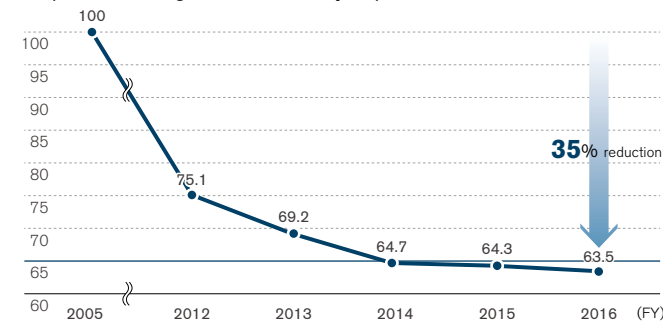
Demand for motor vehicles is expected to continue to rise. Mature markets are recovering from the global recession and emerging markets continue to expand. Nissan is pursuing the greatest possible improvements to the fuel efficiency of internal combustion engines and introducing more fuel-efficient vehicles to the market.

Improved Corporate Average Fuel Efficiency

Nissan strives to develop technologies to maximize the overall energy efficiency of internal combustion engines and improve transmission performance. It is also working to boost the efficiency of hybrid systems that gather and reuse kinetic energy captured from braking. Nissan's core technologies in this area are lithium-ion batteries, Intelligent Dual Clutch Control and Xtronic transmission (Continuously Variable Transmission: CVT) systems. Considering space within the vehicle, usage, price and other factors, the company selects the optimum fuel-efficiency technologies for particular vehicles and launches them in the market. The aim is to reduce fuel consumption and CO₂ emissions without sacrificing the pleasure and ease of driving.

Nissan targeted a 35% improvement in corporate average fuel efficiency by fiscal 2016 from the fiscal 2005 level (as measured in average fuel efficiency in the Japanese, U.S., European and Chinese markets). In fiscal 2014, the target was achieved ahead of schedule.

Corporate Average Fuel-Efficiency Improvement



Top-Level Efficiency Due to Improved Engines and CVT

Current internal combustion engine vehicles lose approximately 70% of their fuel's energy as waste heat. Nissan aims to minimize energy loss and increase fuel efficiency by improving combustion efficiency, as well as reducing intake and exhaust resistance and friction.

Nissan is expanding its range of fuel-efficient engines. The Qashqai's new 1.2-liter direct-injection turbo engine has boosted fuel efficiency by up to 11%. Technologies in the Juke's 1.6-liter direct-injection turbo engine have increased fuel efficiency by up to 10%. These include a low-pressure cooled exhaust gas recirculation system and mirror bore coating, formed by using high voltage to liquefy low-carbon steel and spray it onto the treated surfaces. The new-generation Serena's new 2.0-liter direct-injection engine features an optimized combustion chamber and reduced friction, while the Maxima's new 3.5-liter V6 engine, with around 60% of its components redesigned, has boosted fuel efficiency by up to 15%. The Infiniti Q60 has added efficiency without compromising power performance through its 3.0-liter V6 direct-injection turbo engine, which combines high output with fuel economy.

Nissan's Xtronic transmission (CVT) provides "stepless" gear shifting, enabling the optimal RPM level for the vehicle at any speed. This allows for a balance of smooth, powerful driving and fuel efficiency when accelerating. Nissan employs Xtronic transmission in a wide range of vehicles, from "kei" minicars to midsize cars in the 3.5-liter class. The new-generation midsize Xtronic transmission (for use in cars with 2.0- to

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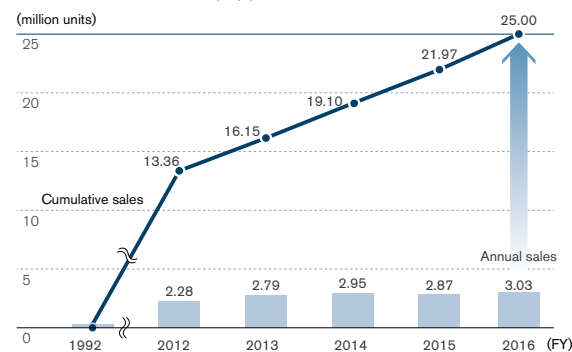
3.5-liter engines) has been installed in products worldwide since 2012. This system's maximum ratio coverage of 7.0, and friction reduction of around 40%, improve fuel efficiency by up to 10% (in-house measurement using U.S. standards). The new-generation small Xtronic transmission (for use in "kei" minicars and cars with engine capacities of up to 1.8 liters) has a maximum ratio coverage of 8.7 and reduces friction, improving both fuel efficiency and drivability.

In fiscal 2016, these technologies helped to give the Maxima and Tiida class-leading fuel efficiency at their respective launches in the Chinese market.

Nissan's goal was to ship 20 million Xtronic-equipped vehicles, with their fuel-efficiency benefits, by fiscal 2016 from their first launch in fiscal 1992, thereby helping to reduce global CO₂ emissions. Nissan sold 3.03 million Xtronic vehicles in fiscal 2016, bringing the cumulative total to 25.00 million, having already achieved our target of 20 million one year ahead of schedule.

As of time of sale, as measured by Chinese fuel-efficiency standards: Maxima, 7.8 L/100 km; Tiida, 5.3 L/100 km.

Number of Xtronic-Equipped Units Sold



A Broader Lineup of Hybrid Vehicles

Hybrid vehicles, which run on a combination of a gasoline-powered engine and an electric motor, offer improvement of fuel efficiency and considerable reductions in CO₂ emissions. Nissan has developed a unique hybrid system using a high-output lithium-ion battery together with a single motor for both drive and regeneration, as well as an Intelligent Dual Clutch Control system in which two clutches are linked in parallel, one to the motor and one directly to the engine and transmission. Vehicles using the system deliver both fuel efficiency and powerful responsiveness. Nissan introduced the system into rear-wheel-drive vehicles in 2010 and front-wheel-drive vehicles in 2013; as of the end of March 2017, it had been expanded to a total of 10 models.

The X-Trail Hybrid, launched in 2015, achieves high fuel efficiency through expanded EV driving range and optimization of system operation modes.

As of time of sale, as measured by Japanese fuel-efficiency standards: X-Trail, 20.6 km/L.

Development of the VC-Turbo

In August 2016, Nissan announced that it had completed development of the VC-Turbo, the world's first production-ready variable compression ratio engine, to be made available in Infiniti-branded luxury models. The engine swiftly selects the optimum compression ratio between 8:1 (for high performance) and 14:1 (for high efficiency), based on the driving conditions and driver input. The VC-Turbo is lighter and more compact than comparable non-turbocharged engines, while also delivering multiple benefits to customers including reduced fuel consumption and emissions, lower noise levels and reduced vibration.

Toward Lighter Vehicles

Vehicle weight reduction makes important contributions to improve fuel efficiency. Nissan is promoting vehicle weight reduction by optimizing vehicle body structure, developing better forming and joining techniques and substituting materials. For example, the company has made exterior components lighter. By using foamed resin on the body side molding of the Serena, launched in Japan in 2016, it has achieved a weight reduction of 2 kg while maintaining a smooth surface.

In the field of material substitution, Nissan has put its own 1.2 gigapascal (GPa) Ultra High Tensile Strength Steel with High Formability, the world's first such material to combine these levels of tensile strength and workability, to use in the Infiniti Q50 (marketed in Japan as the

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Skyline) and the Murano in North America and, in 2016, in the Infiniti Q60. Ultra High Tensile Strength Steel reduces the amount of material used while allowing production on the same lines, making it possible to create lighter cars with thinner components while reducing total costs. The company plans to expand the usage rate of these materials to 25% of all production for new vehicles marketed from 2017 onward.

Reducing Congestion and Enhancing Environmental Performance with ITS

An automobile's fuel efficiency depends not just on the car's own capabilities but also on the driving environment and the way it is driven. Nissan is using Intelligent Transport Systems (ITS) and actively working to create infrastructure that will help to improve the traffic environment.

Under commission from Japan's New Energy and Industrial Technology Development Organization (NEDO), Nissan worked with the Beijing Municipal Commission of Transport beginning in 2010. In the Chinese capital, the company conducted tests of a dynamic route guidance system (DRGS) using IT terminals and eco-driving support to alleviate traffic congestion in the city.

In one experiment, around 12,000 resident drivers in Beijing's Wangjing district used Portable Navigation Devices with DRGS and eco-driving support. Results from the experiment, which lasted around one year, showed that DRGS cut travel time by 5.1% and increased fuel economy by 7.6%. Enabling drivers to avoid congested roads led to the dispersion of traffic flow, enhancing overall speed within the area. Furthermore, by helping users cultivate better driving habits, eco-driving support increased fuel economy by 6.8%.

A simulation conducted at the same time estimated that if 10% of all traffic in Beijing used DRGS, travel speed throughout the city would increase by approximately 10%, and both fuel consumption and CO₂ emissions would decrease by approximately 10%.

The Beijing Municipal Commission of Transport presented Nissan with an award for its major contributions toward easing congestion, saving energy and improving the environment in Beijing through this successful project. In an official publication, China's Ministry of Commerce also gave the company a Corporate Leadership Award. Nissan is further developing these activities and conducting research projects aimed at raising air quality using ITS and EVs in cooperation with the Chinese government and universities.

The company has learned that eco-driving support services, which encourage gentle braking and acceleration and maintenance of stable speed, lead to safer driving and consequently can reduce traffic congestions caused by traffic accidents while also helping to improve air quality. The study also proved that even in China, which relies heavily on coal power, EVs not only contribute to saving energy but also lead to reductions in PM 2.5 air pollution and CO₂ emissions on a well-to-wheel basis.

The company is working actively to improve urban environments and air quality.



CORPORATE CARBON FOOTPRINT MINIMIZATION

In a world that is often said to be carbon-constrained, reducing CO₂ emissions is a task to be tackled by all companies. Nissan is improving energy efficiency and promoting renewable energy adoption to reduce CO₂ emissions.

A 20% Emission Reduction in Corporate Activities

By fiscal 2016, Nissan aimed to reduce CO₂ emissions associated with its corporate activities by 20% globally from fiscal 2005 levels, as measured by the index of CO₂ emissions per vehicle (total emissions generated from Nissan global corporate activities divided by the total Nissan vehicle sales volume). In fiscal 2011, Nissan strengthened its management and

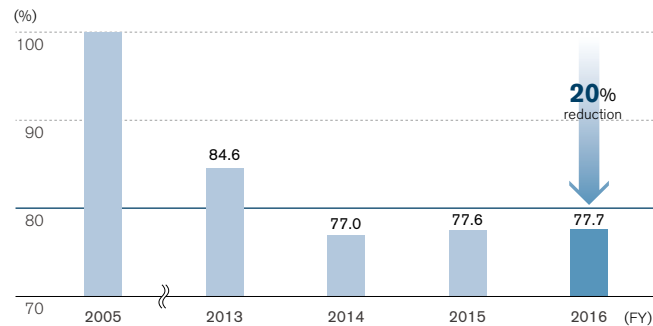
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broadened the scope of measurable objectives to include logistics, offices and sales companies in addition to production sites. At the same time, the company expanded its emission-related initiatives, introducing high-efficiency equipment, energy-saving measures and the use of renewable energy. Nissan met its reduction target in fiscal 2014, and the result in fiscal 2016 was a 22.3% reduction from the fiscal 2005 t-CO₂/vehicle level.

To reach its CO₂ emission goals, Nissan set a target of raising the usage rate of renewable energy in its global business activities to 9% by fiscal 2016. In fact, it raised the rate to 9.2% by fiscal 2016. Nissan is taking three approaches to increasing the adoption of renewable energy, considering conditions where its production sites are located. These are power generation in company facilities, sourcing of energy with a higher proportion of renewables and leases of land, facilities and other Nissan assets to power producers. ▶

▶ Nissan leased approximately 350,000 square meters of unused land in Oita Prefecture for solar power generation in May 2013, and the roof of group company Nissan Kohki's Samukawa Plant for the same purpose in January 2014.

Falling Global Emissions from Corporate Activities



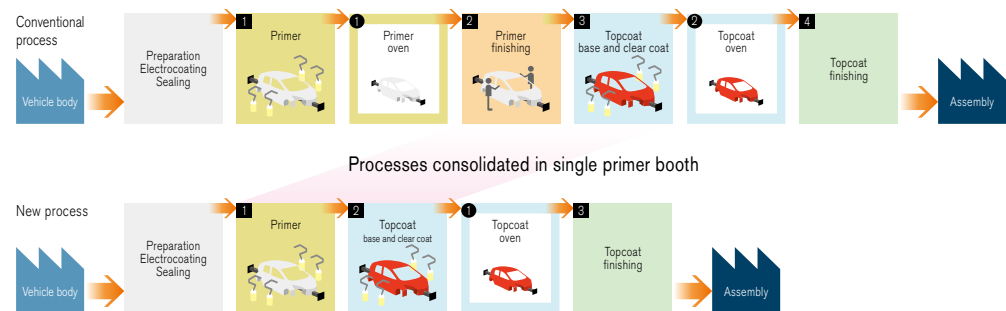
Energy Saving in Global Production

Most CO₂ emissions in the manufacturing process come from the consumption of energy generated by fossil fuels. Nissan engages in a variety of energy-saving activities in the manufacturing process in pursuit of the lowest energy consumption and CO₂ emissions of any automobile manufacturer.

In production technology, the company is introducing highly efficient equipment, improving manufacturing techniques and adopting energy-saving lighting. Another key approach is Nissan's three-wet paint process. Approximately 30% of all CO₂ emissions from plants come from the painting process. Shortening or eliminating baking stages within this process brings about a reduction in emissions.

The three-wet paint process adopted by Nissan removes the need to bake in between the primer layers and the topcoat layers. Instead, layers are applied successively before baking, achieving a reduction in CO₂ emissions of more than 30%, according to Nissan calculations. In 2013, the company introduced this process in Nissan Motor Kyushu (NMK), the Smyrna Plant in the United States, the second Aguascalientes Plant in Mexico (started operations November 2013) and the Resende Plant in Brazil (started operations February 2014). At NMK, the company was able to adopt the three-wet process with no shutdown of production lines and successfully shorten total production time.

Three-Wet Paint Process (Combined Primer and Topcoat Application)



•Oven process

Reduces CO₂ emissions by applying primer and topcoat (base coat and clear coat) layers in succession, combining two processes (① and ② in the upper diagram) into one (① in the lower diagram).

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To reach the defined objectives for CO₂ emissions and the use of energy, Nissan solicits the necessary facility proposals from each global site, preferentially allocating investment based on the benefit in CO₂ reduction compared to project costs. By making value of carbon one key factor in internal evaluations, Nissan enables more efficient investment and greater competitiveness.

Nissan plants use finely controlled lighting and air conditioning for low-energy-use, low-energy-loss operations. The company is promoting CO₂ emission reduction activities and introducing cutting-edge energy-conservation technology from Japan in its plants worldwide. Meanwhile, Nissan plants in all countries learn and share best practices with each other.

In addition, Nissan Energy Saving Collaboration (NESCO) diagnoses energy loss at the plants and proposes new energy-saving countermeasures. These proposals could amount to a potential reduction in CO₂ emissions of some 72,000 tons in fiscal 2016, according to Nissan calculations. A NESCO team was established for Japan in 2003, and teams for Europe, Mexico and China in 2013. As a result of these activities, Nissan finished second in the manufacturing sector in the 20th Nikkei Environmental Management Survey. A NESCO team has also been launched to support energy-saving efforts at Alliance partner Renault.

With the recently updated cogeneration systems in its Yokohama Plant, Nissan works together to supply the nearby J-Oil Mills Inc. facility with steam flowing through pipes laid under public roads, thereby maximizing cogeneration efficiency. Using this method, in fiscal 2016 the company reduced CO₂ emissions by 7,259 tons per year. As a result of these activities, Nissan won a prize for excellence in the industrial division of the 2016 Cogeneration Awards presented by the Advanced Cogeneration and Energy Utilization Center Japan, as well as the 2017 Energy Conservation Center, Japan, Chairman's Award presented by the Energy Conservation Center, Japan.

In December 2014, the company began a "partial procurement scheme," sourcing the energy used at its plants and other major business locations through both major electric utilities and Japan's Power Producers

& Suppliers (PPS) system, which involves specified electricity market entrants. Previously each business location selected one major utility company or PPS provider to cover its electricity needs, an approach that allowed selection of a provider with a lower-carbon-generation footprint. Facilities like factories, with their high electrical demand, generally had to procure electricity from a utility company with proven capacity.

The new partial procurement scheme allows all facilities to secure the stable power supply they need while also reducing related CO₂ emissions and costs at the same time. To date the scheme has been implemented at Nissan facilities in Japan, including Global Headquarters, the Sagami-hara Parts Center and Honmoku Wharf, and at partner company locations.

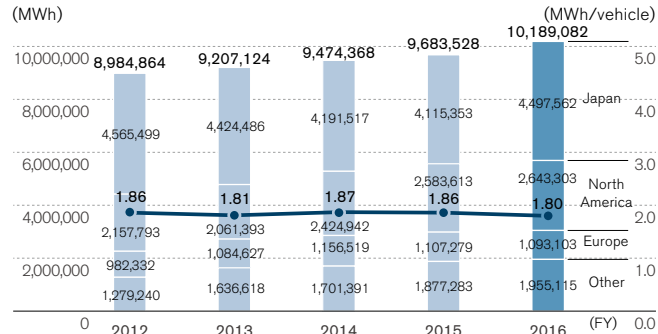
Renewable energy in the form of 10 wind turbines supplies 6,500 kW of power at the Sunderland Plant in the United Kingdom. In 2016, it installed a 4.75 MWh solar farm; together these renewable sources account for 8% of the power used at the plant. Solar panels also produce approximately 200 kW at Nissan's plant in Spain. The first Aguascalientes Plant in Mexico uses energy generated from biomass gas and wind power, and has achieved a renewable energy usage rate of 50% since 2013. In addition, Nissan's Zama Operation Center in Japan is developing small-scale hydropower generators, capable of creating around 0.5 kW of power from a drop of 2.5 meters from drainage pipes, and testing their usage in production plants.

In Japan, Nissan is using tradable green certificates to increase the proportion of renewable energy in the power procured by the company. In fiscal 2016, it procured 39,700 MWh of electricity generated from renewable sources.

With these activities, Nissan set a target of reducing CO₂ emissions by 27% from the fiscal 2005 level by fiscal 2016 at all of its production sites, as measured by the index of CO₂ emissions per vehicle (total emissions generated from global Nissan vehicle manufacturing sites divided by the total Nissan vehicle production volume). In fiscal 2016, CO₂ emissions per global vehicle were approximately 0.53 tons, a reduction of 27.0% from the fiscal 2005 level.

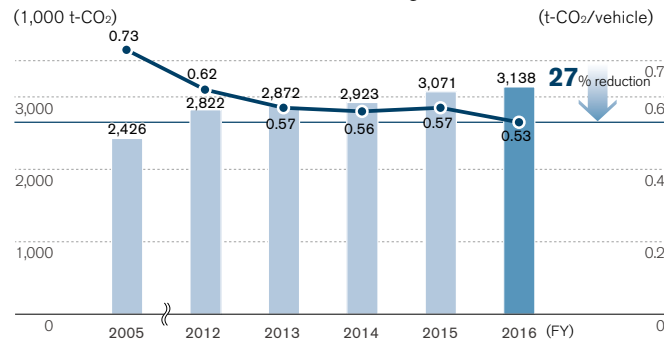
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Global Energy Consumption
(MWh)



* Figures are for the Nissan Group worldwide, including consolidated companies.

Global CO₂ Emissions from Manufacturing Activities
(1,000 t-CO₂)



* Figures are for the Nissan Group worldwide, including consolidated companies.

More Efficient Logistics and Modal Shifts

In 2000, Nissan began sending chartered trucks for pickup and delivery of parts, an uncommon method among automobile manufacturers in Japan at the time. This approach—adopted widely across the company, including at its overseas manufacturing sites—has increased global operational efficiency. Nissan works together with suppliers to optimize the frequency of deliveries and transport routes and to improve packaging specifications for better loading ratios so fewer trucks are required. The company is also actively expanding its modal shift from the use of trucks to rail for transport. Through a 2014 expansion of this approach to include cooperative transport of production parts with other OEMs, in addition to complete vehicles and service parts, the company is aiming for further efficiency in this area. The company also reduces transportation distance by sourcing necessary production components for plants from surrounding areas as much as possible.

Nissan engineers devise efficient packaging for the huge number of parts of different shapes and materials that go into automobiles. Through simultaneous-engineering logistics activities, Nissan works from the design stage to create parts and develop new vehicles with consideration for transportation efficiency, as well as to reduce the part shipments per vehicle. The aim is to decrease transport volumes.

In container transport, Nissan has long made use of 40-foot “high cube” containers and runs software-based simulations to reduce wasted container space. As a result of these activities, the container filling rate for parts rose from 89.6% in 2010 to 94.6% in 2016.

The company constantly reviews transport methods and is currently undertaking a modal shift to rail and maritime transport. Some 70% of completed vehicles in Japan are now transported by sea. Part shipments from the Kanto area around Tokyo to Nissan Motor Kyushu are nearly all conducted by rail and ship. The Japanese Ministry of Land, Infrastructure, Transport and Tourism (MLIT) has recognized Nissan as an outstanding enterprise for this modal shift to sea transport.

At Nissan sites outside Japan, transport methods are selected to best match the local geographical conditions. Transport of completed vehicles is increasingly shifting from truck to rail and ship, depending on the destination. In China, the company is increasing the proportion of completed vehicles that are transported domestically by ship or rail.

Since 2010, Nissan has also been promoting the use of energy-

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Global energy consumption and CO₂ emissions from manufacturing activities have received third-party certification. For details, refer to the environmental data at the end of this report.

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» website

❶ Click here for more information on Nissan's energy-efficient car carriers.

❷ Total emissions generated from transportation to Nissan manufacturing sites and retail outlets in Japan, North America, Europe and China divided by the total number of vehicles transported.

❸ Global Headquarters, Sagami-hara Parts Center, Nissan Education Center, Customer Service Center and Honmoku Wharf (all in Kanagawa Prefecture).

❹ NESCO diagnoses energy loss at plants and proposes new measures to save energy.

efficient vessels for sea shipments of its vehicles. By 2016, the fleet had grown to include seven energy-efficient car carriers. ^❶

While expanding its global logistics operations, Nissan is increasing efficiency and implementing a modal shift in transportation, targeting a 6% reduction in CO₂ emissions by fiscal 2016 from the fiscal 2005 level, as measured by the index of CO₂ emissions per vehicle. ^❷ In fiscal 2016, CO₂ emissions per global vehicle were approximately 0.39 tons, exceeding the company's target with a decrease of 8.6%.

Our Efforts at Dealerships and Offices

Nissan is promoting CO₂ emission management at all business locations and dealerships in Japan, as well as at bases of operations in North America, Europe and China. It aims to reduce total emissions per floor area by 1% each year.

At business locations in Japan, Nissan is expanding ecological initiatives including digitization of pay slips. Nissan's retail outlets are also continually working to increase energy efficiency: many have adopted high-efficiency air conditioning, insulation films, ceiling fans and LED lighting. During renovation work, some outlets have installed lighting systems that make use of natural daylight and insulated roofs. In addition, through Nissan Trading, the company operates the Nissan Power Producers and Suppliers (PPS) scheme, sourcing clean energy for which CO₂ emissions and costs have been taken into account through Japan's PPS system. In 2016, approximately 26,113 MWh of clean energy was supplied to five Japanese business locations, ^❸ including the company's Global Headquarters in Yokohama. Nissan is also broadening supply to dealerships from Nissan Trading and other PPS systems. These systems supply around 1,067 retail outlets in the Kanto, Chubu, Tohoku, Kansai and Kyushu areas with around 145,134 MWh of energy, equivalent to an annual reduction of some 11,057 tons in CO₂ emissions. Nissan Energy Saving Collaboration (NESCO) teams ^❹ have also expanded the scope of their activities beyond production plants to contribute to reducing emissions in the Nissan Technical Center in Atsugi.

The company's efforts go beyond CO₂ management. Nissan is pursuing other environmentally friendly policies, such as improving its video and telephone conference facilities and using Microsoft's Office Live Meeting web conferencing service to bring participants in multiple locations together when they need to share documents. This reduces the number of business trips needed worldwide, improves workplace efficiency and reduces costs.



Solar panels on the roofs of some Kanagawa Nissan dealerships. Power from the panels is supplied to dealerships through the Nissan PPS system.

NATURAL RESOURCE USE MINIMIZATION

Nissan is making efforts to use resources more efficiently and to diversify its supplies with renewable resources and recycled materials. The company aims to address the risk of rising costs or depletion of mineral resources caused by growing demand for them and to reduce the environmental impact of their extraction.

Increasing Usage of Recycled Material to 25%

Economic development in emerging countries is rapidly increasing demand for mineral and fossil resources. Some forecast that all currently known mineral resources will have been extracted by 2050 if present trends continue. Some mining sites currently in operation and new exploration sites are located in areas where local ecosystems need to be preserved, and there is concern about the environmental effects of topsoil excavation, deforestation and wastewater.

To address these issues, Nissan is taking measures to minimize the volume of newly extracted natural resources. In addition to using resources more efficiently, the company is increasing the proportion of renewable resources and recycled materials and increasing diversification. The company's recycling efforts are based on the policy that once a natural resource is extracted, it should continue to be used, while maintaining quality, to minimize environmental impact. Nissan achieved a 25% increase

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in the recycled material usage ratio per new vehicle for which production began in fiscal 2016 in Japan, the United States and Europe. In the long term, through promotion of activities, the company aims to maintain the total volume of new natural resource usage at the 2010 level.

Nissan's Closed-Loop Recycling System

Closed-loop recycling is a way of recycling waste generated during vehicle production and scrap from end-of-life parts into recycled material that has equal quality as new resources, using it as material in the same type of products. With this method, the same material can be used repeatedly, thus greatly reducing CO₂ emissions and the environmental impact over the product lifecycle. The company is focusing its efforts on closed-loop recycling of steel, aluminum and plastic. These materials, which account for a large proportion of vehicle content, have a major environmental impact when they are extracted and require a large amount of energy for production and disposal.

Nissan is working to reduce the steel and aluminum scrap left over in the manufacturing process. The company is also working globally with business partners to collect and reuse this scrap as material for new vehicles. To further reduce natural resource usage, it uses electric-furnace sheet steel made from steel scraps in the Rogue, the Murano and other vehicles produced in North America. End-of-life aluminum wheel rims are also collected for recycling in the form of new wheels or chassis components. In fiscal 2016, Nissan collected about 3,300 tons of wheel rims.

In Japan, Nissan is collecting plastic in the form of finished bumper scrap generated at its plants and turning it into recycled plastics in a finished bumper reprocessing line set up in the Oppama Plant. Recycled plastics have already been given new life as bumpers in the Nissan LEAF and many other new vehicles. This initiative has been expanded to Nissan's joint venture in China, Dongfeng Motor Co., and in 2014 to production of replacement bumpers.

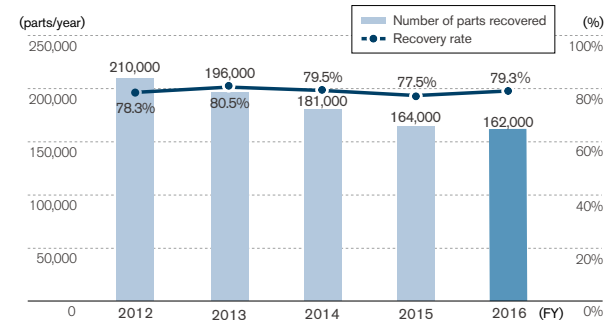
Exchanged bumpers collected from dealerships are being recycled as materials used under covers and for other components. An enhanced bumper return program allowed Nissan to collect and recycle about 162,000 pieces of bumpers in fiscal 2016, representing 79.3% of bumpers removed at Japanese dealerships.

Nissan's copper usage has also been rising due to the recent increased sales of hybrid vehicles and EVs. The company has begun using scrap left over from manufacturing as an additive during foundry processing.

Closed-Loop Recycling



Recovered Bumpers



Recyclability Rate and Recovery Rate

Nissan considers the three Rs—reduce, reuse and recycle—starting with the design stage for new vehicles. It takes into account the whole lifecycle when designing and developing vehicles, ensuring the ease of dismantling and recycling after they are scrapped. Since fiscal 2005, all new models launched in the Japanese and European markets have achieved a 95% or greater recyclability rate. ▶

▶ Calculated based on 1998 Japan Automobile Manufacturers Association definition and calculation guidelines (in Japan) and ISO 22628 (in Europe).

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Nissan also carries out experimental studies to optimize processing and improve the recovery rate for end-of-life vehicles (ELVs). The studies first aimed to establish methods for processing waste oil, waste liquids, lead and other substances that impact the environment and now focus on reuse of valuable materials. Feedback from the studies has led to improvements in dismantling techniques and has aided the company's product design division in choosing suitable materials and designing vehicles that are easier to dismantle. Nissan calculates that the recovery rate for its ELVs in Japan has consistently been 95% or greater since fiscal 2006; the recovery rate for fiscal 2016 was 99.7%.

Reducing Scarce Resource Usage

Hybrid vehicles and electric vehicles (EVs) emit less CO₂ over the lifecycle of the product than gasoline-powered vehicles, but scarce resources called rare earths are a necessary component of their motors. Uneven distribution of rare earth elements and the forces of demand and supply give rise to concern about price changes, making it important to reduce their usage.

In 2012, Nissan developed a new electric motor that requires 40% less dysprosium (Dy) compared to conventional EV motors. This motor is currently used in the Nissan LEAF, and Nissan is successively installing it in its hybrid vehicles. The 2016 Note e-POWER achieves a 70% reduction in Dy in its motor magnets. The company is conducting technical research on further reductions and has the ultimate goal of achieving zero usage of Dy in other components as well.

Nissan aims to reduce and optimize the usage of the other rare earth elements neodymium (Nd), cerium (Ce) and lanthanum (La). As of fiscal 2016, the company had reduced annual use of the four rare earth elements Dy, Nd, Ce and La by more than 30% when compared to the fiscal 2011 levels.

Thorough Measures for Waste Materials


Nissan actively promotes measures based on the 3R approach in its production processes whenever possible, striving to minimize the waste generated and maximize recycling efficiency by thoroughly sorting waste. These efforts have paid off. Since fiscal 2010 the company in Japan has achieved a 100% recovery rate at all of its production sites, including five manufacturing plants, two operations centers and five affiliates. In Mexico, the first Aguascalientes Plant achieved this in 2011. Nissan is working to bring this rate to an industry-leading level in each global region.

Nissan has been making great efforts to reduce the number of wooden pallets and cardboard boxes used in import and export parts shipping. The company began replacing them with units made from steel more than 30 years ago, rolling out plastic substitutes more than 20 years ago. These are foldable and can be returned for reuse. Nissan has also been working with its Alliance partner Renault to expand use of globally standardized, returnable containers. Through design activities carried out concurrently with logistics operations, Nissan has recently considered ways to optimize the shape of parts from the development stage, thus helping to reduce the packaging materials required.

Through these efforts, Nissan plans to reduce the amount of waste from its production factories by 2% annually in Japan and by 1% annually worldwide compared to waste levels expected if no special steps had been taken from fiscal 2011 onward.

Sales of Nissan Green Parts

Parts with the potential for recycling include those reclaimed from end-of-life vehicles, as well as those replaced during repairs. In Japan, Nissan collects and thoroughly checks the quality of these secondhand parts. Those that receive a passing grade are sold through its retail outlets as Nissan Green Parts. Nissan sells these parts in two categories: reusable parts, which are cleaned and tested for quality before sale, and rebuilt parts, which are disassembled and have components replaced as needed.



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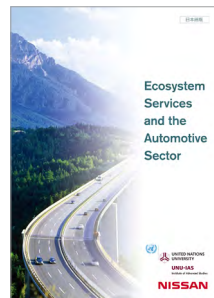
▶ For details, refer to the environmental data at the end of this report.

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PROTECTING THE AIR, WATER, SOIL AND BIODIVERSITY

The United Nations Millennium Ecosystem Assessment report issued in 2005 concluded that ecosystem services evaluated had degraded over the past 50 years. Many scientists believe that humans have changed the Earth's ecosystems more rapidly and extensively than in any comparable period in history. Humankind depends on a number of ecosystem services, including provision of food and fresh water, climate regulation and protection from natural disasters. The automotive industry must recognize both its impact on ecosystems and its dependence on these services. Companies today face the pressing need to balance environmental preservation and economic progress as they pursue their business activities.

Using methods identified in the Corporate Ecosystem Services Review, Nissan has evaluated its value chain from the extraction of material resources to vehicle production and operation. Based on the results, the company has identified its three priority areas as an automobile manufacturer: energy sourcing, mineral material sourcing and water usage. Nissan has followed up by positioning the business risks and opportunities and re-evaluating and further developing its traditional environmental initiatives. In 2010, Nissan published "Ecosystem Services and the Automotive Sector," a report collating the outcome of this work. Company calculations in June 2013 showed that more than 20 times as much water was used upstream in the supply chain than by Nissan itself.



*1 Developed by the World Resources Institute in cooperation with the World Business Council for Sustainable Development and Meridian Institute, based on the U.N. Millennium Ecosystem Assessment.

▶ website
*2 Click here for more information on "Ecosystem Services and the Automotive Sector."

Cleaner Exhaust Emissions

Nissan proactively sets strict environmental goals and targets as it pursues development of cleaner combustion technologies, catalysts for purifying emissions and other solutions. The ultimate goal is for automotive emissions to be as clean as the atmosphere. The company introduces vehicles that meet emission regulations in each country in a timely manner. Nissan aims to reduce the environmental impact of society as a whole by offering vehicles with highly efficient, cutting-edge emission-reduction technologies at reasonable prices. *1

Nissan's Sentra CA, released in the United States in January 2000, *2 was the first gasoline-powered vehicle in the world to receive Partial Zero Emissions Vehicle (PZEV) certification, *3 in compliance with the emission requirements of the California Air Resources Board.

The Bluebird Sylphy, released in Japan in August 2000, became the first vehicle to gain certification from the Ministry of Transport (now the Ministry of Land, Infrastructure, Transport and Tourism) as an Ultra-Low Emission Vehicle (U-LEV). *4 In addition, this model became Japan's first vehicle to receive Super Ultra-Low Emission Vehicle (SU-LEV) certification *5 in 2003.

Later, the X-Trail 20GT was the first vehicle in the world to meet Japan's 2009 Emission Regulations, among the most stringent in the world; it was launched in 2008, the year before the regulations came into effect. *6 The X-Trail 20GT carries a diesel filter that traps and eliminates particulate matter, NOx absorption and oxidation catalysts and an M9R clean diesel engine developed through the Renault-Nissan Alliance. The company has thus overcome the difficult challenges of making diesel vehicle exhaust cleaner, achieving both energy efficiency and reduced CO₂ emissions. An X-Trail 20GT with a 6-speed automatic transmission (including manual mode) was introduced in 2010.

Additionally, Nissan is working to improve air quality through the use of Intelligent Transport Systems (ITS) that tackle traffic congestion and other urban environmental issues. *7

▶ page_36
*7 Click here for more information on Nissan's ITS initiatives.

*6 The 2009 emission standards stipulate reductions of NOx by 47% and particulate matter by 64% from the levels required by the 2005 emission standards (applicable to vehicles weighing more than 1,265 kg). The regulations went into effect for new models in October 2009 and have been applied to existing models and imported cars since September 2010.

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*1 Click here for more information on how Nissan is meeting emission regulations in different countries. For more details, see the CSR data section in this report.

*2 This vehicle is no longer produced.

*3 PZEV vehicles must meet requirements in the areas of Super Ultra-Low Emission Vehicle tailpipe emission level and zero-evaporative emissions, be equipped with an onboard diagnostic system and have an extended warranty of 150,000 miles or 15 years.

*4 U-LEV: Ultra-Low Emission Vehicles produce 75% less nitrogen oxide (NOx) and nonmethane hydrocarbon (NMHC) than the 2000 emission standards level.

*5 SU-LEV: Super Ultra-Low Emission Vehicles produce 75% less emissions than the 2005 emission standards level.

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Plant Emission Management

Nissan thoroughly implements systems and control standards at its production plants to reduce the amount of air pollutants emitted during operations. The company's own air pollution control targets are more stringent than those mandated by the countries in which it operates.

In Japan, Nissan has taken strict measures for emissions of NOx and SOx pollutants from its factories, reducing the amount of these emissions to one quarter of the levels emitted in the 1970s. Nissan has lowered NOx and SOx emissions by introducing low-NOx burners in the ovens and boilers that provide heat for painting lines and by switching from heavy oil and kerosene to fuels with low SOx emissions for these ovens and boilers.

A current challenge is the reduction of volatile organic compounds (VOCs), which readily evaporate and become gaseous in the atmosphere. These compounds account for approximately 90% of the chemicals released in Nissan's vehicle production processes. The company is working to increase the recovery of cleaning solvents and other chemicals and to reduce the amounts of these substances emitted from its plants ahead of implementation of new regulations in each country where it operates.

Nissan is also introducing water-based paint lines that limit VOC emissions to less than 20 grams per square meter of painted surface. The company has adopted these lines in the Nissan Motor Kyushu Plant as well as at two plants in Aguascalientes in Mexico, the Resende Plant in Brazil, the Smyrna Plant in the United States and the Huadu Plant in China. Nissan set a target for fiscal 2016 of a 15% reduction in VOC emissions by painted surface area from fiscal 2010 levels, successfully achieving a reduction of 25.4% by fiscal 2016.

Nissan's Tough Voluntary Standards

Stricter controls on environment-impacting substances are being implemented in countries around the world. Examples include the European ELV Directive, the European Union's Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) Regulation, which went into force in June 2007, and Japan's Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, Etc. To help minimize the potential release of formaldehyde, toluene and other volatile organic compounds (VOCs) in vehicle cabins, the Japan Automobile Manufacturers Association has launched a voluntary program that calls for all new models launched in Japan from April 2007 to meet standards set by the Japanese Ministry of

Health, Labor and Welfare for concentration levels of 13 compounds in vehicle interiors.

Nissan is strengthening its management of environment-impacting substances, adhering to a planned schedule for their reduction and advancing the use of alternative substances. In 2005, the company drew up policies regarding the use of substances scientifically recognized as being hazardous or carrying high hazard risks, as well as those identified by NGOs as dangerous. In 2007, these policies, which restrict environment-impacting substances even more than the domestic laws of the countries where it operates, were rolled out globally.

Based on these policies, the company has developed the Nissan Engineering Standard (NES) for the "Restricted Use of Substances." The standards identify the chemical substances whose use is either prohibited or controlled. Nissan applies them in selecting all materials, components and parts used in its vehicles from initial development onward. For example, four heavy metal compounds (mercury, lead, cadmium and hexavalent chromium) and the polybrominated diphenyl ether (PBDE) flame retardant have been either prohibited or restricted in new type models (excluding OEM vehicles) launched globally since July 2007. To control VOC use in car interiors, Nissan has adopted the voluntary targets of the Japan Automobile Manufacturers Association as its own standards for global operations and is reviewing and reducing their use in materials and adhesives for seats, door trim, floor carpet and other parts.

Every year, Nissan revises the "Restricted Use of Substances" NES to reflect changes in international laws and regulations and to add new substances covered by its voluntary standards. In the 2016 revision, it unified standards with Renault and expanded activities carried out across the Alliance.

Together with suppliers, Nissan builds and maintains communication and management systems internally and within its supply chain. For example, the company discloses information and is registered with and submits REACH reports to the relevant authorities about the vehicles and parts produced in or imported to Europe from Japan and other countries (including some from the United States). The company also complies with Classification, Labeling and Packaging of Substances and Mixtures regulations.

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Water-Use Management

As the global population grows, water use increases and water scarcity becomes a more serious problem. Climate change also has the potential to bring about reductions in glacial water resources and changes in precipitation patterns, further driving the need for water usage reduction.

Plants producing Nissan vehicles and parts are located all over the world, and they all use water as part of the production process. The company is making efforts to manage and reduce water usage at all of its production plants. It planned to achieve a 15% reduction from fiscal 2010 levels in water usage per vehicle produced by fiscal 2016, actually reducing water usage by 15.7%. To achieve its goal, Nissan built reservoirs for rainwater at the Chennai Plant in India and the second Aguascalientes Plant in Mexico and installed wastewater recycling equipment at the Chennai Plant, the Huadu Plant in China and the Oppama Plant in Japan. The company is implementing best practices globally to reduce water usage.

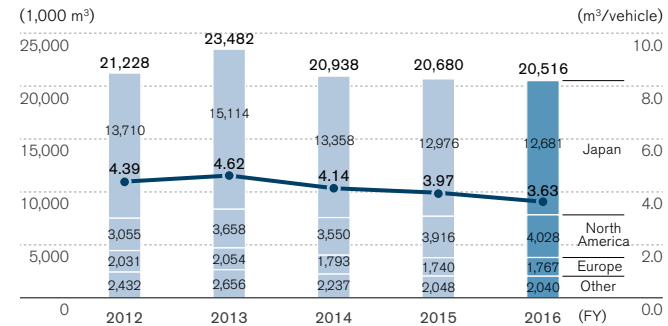
Nissan is also working to reduce water usage at its Global Headquarters by processing rainwater and wastewater from kitchens and other sources to use for flushing toilets and watering some plants.

Cleaner Effluent Through Wastewater Treatment

Nissan thoroughly processes wastewater at its various plants. Wastewater from the company's two plants in Aguascalientes, Mexico, is used to maintain greenery on the sites, with no offsite discharge.

Nissan is also strengthening water pollution measures in its Japanese plants. In preparation for unexpected occurrences, such as the discharge of oil, it has attached water quality sensors to the discharge ports of wastewater treatment facilities. Discharge of water outside the grounds is automatically suspended if water quality problems are detected.

Wastewater Release



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▶ For more details, see the CSR data section in this report.