



## Environmental Efforts in Product Development

In order to reduce the environmental impact of vehicles, it is important that efforts are directed at every stage of the vehicle life cycle. To this end, Nissan is moving forward with the development of technology and environmentally friendly vehicles at the early stages of product development for cleaner exhaust emissions, improved fuel economy (and reduced CO<sub>2</sub> emissions), reduced vehicle noise, reduced air-conditioning refrigerant emissions, management and reduced use of chemical substances with an environmental impact, and design for recycling.



### Cleaner Exhaust Emissions

Over 90% of our gasoline vehicles sold in Japan have achieved the ultra-low emissions vehicle (U-LEV\*) standard. This has the same effect as selling over 400,000 zero emissions vehicles such as fuel cell vehicles and electric vehicles.

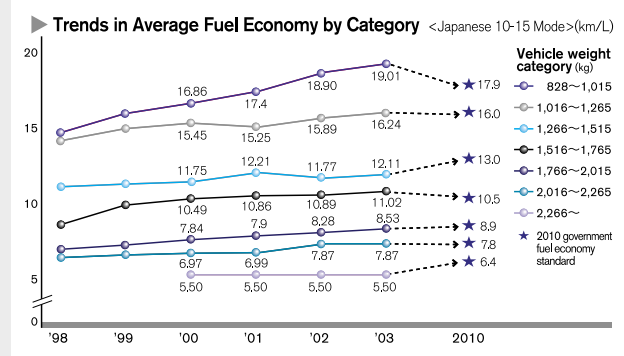
\*U-LEV: An environmentally friendly vehicle that emits 75% fewer exhaust emissions of nitrogen oxide (NOx) and hydrocarbon (HC) than the level prescribed in the year 2000 exhaust emissions standards.

Additionally, the Bluebird Sylphy was the first in Japan to receive certification as a super ultra-low emission vehicle (SU-LEV), with 75% fewer emissions than the level prescribed in the 2005 exhaust emissions standards. We will continue to expand our SU-LEV lineup in the future.



### Improvement of Fuel Economy (Curbing Global Warming)

Through technology developments such as improvements to engine efficiency, boosting of drivetrain efficiency through Continuously Variable Transmission (CVT) technology, as well as through weight-saving techniques, Nissan met Japan's 2010 fuel economy standard in four out of seven target vehicle weight categories.



### Development of Clean Energy Vehicles

Nissan strives to develop and support the widespread use of clean energy vehicles that use alternative energy sources, such as natural gas and fuel cells, which are cleaner sources of energy that also emit less CO<sub>2</sub>.

Nissan launched limited lease sales of the 2003 model X-TRAIL FCV, delivering the first vehicle to Cosmo Oil Co., Ltd.



## FY 2003 Objectives and Results (Products)

Item	Objectives and Activities Up to 2005	Results	Comments
Improvement of fuel economy (curbing global warming)	Early attainment of Japan's 2010 fuel economy standards for gasoline vehicles and 2005 standards for diesel vehicles [Objective] Attainment of the new standards by 2005 target date	+	Met 2010 fuel economy standard in four out of seven target vehicle weight categories
Reduction of exhaust emissions	Gasoline vehicles: Steady expansion of Nissan's ultra-low emission vehicle (U-LEV) lineup, starting with the 2000 launch of the Bluebird Sylphy [Objective] Achieve U-LEV certification for more than 80% of all Nissan passenger cars sold in Japan by end of March 2003 Diesel vehicles: early release of vehicles complying with the latest exhaust emission regulations	+	Bluebird Sylphy the first car in Japan to receive SU-LEV certification
Development of clean-energy vehicles (CEVs)	FCV* <sup>1</sup> Projecting the year 2005 as our technical development goal for practical use Participation in domestic testing program for FCVs under the auspices of the Japanese government in 2002 Other CEVs Research, development, and market introduction of EVs* <sup>2</sup> , CNGVs* <sup>3</sup> , HEVs* <sup>4</sup> , and other CEVs	+	2003 model X-TRAIL FCV limited lease sales commenced (Delivered first vehicle to Cosmo Oil Co., Ltd.)
Promotion of design for recycling and management/ Reduction of environment-impacting substances	Advancing the recycling of new models Attainment of a recoverability rate of 95% or higher* by weight for new models by 2005 (*based on Nissan's in-house calculation standards) Reduction of environment-impacting substances Banning the use of mercury and cadmium with some partial exceptions Reducing the use of lead (to be largely phased out by the end of 2002) and hexavalent chromium (to be reduced to one-half of 1996 levels by 2005)	+	95% recyclability achieved for March, Cube, and Cube Cubic models Materials of reduced use: lead – reduction to less than 1/10 from 1996 levels achieved for all new models
Reduction of vehicle noise	Compliance by all models with voluntary standards for vehicle noise that are tougher than regulatory noise limits	+	Achieved for all models
Control of air-conditioner refrigerant emissions	Attainment of Nissan's voluntary targets for reduced use of the HFC-134a refrigerant	+	Voluntary targets achieved

\*<sup>1</sup> FCV: Fuel cell vehicle

\*<sup>2</sup> EV: Electric vehicle

\*<sup>3</sup> CNGV: Compressed natural gas vehicle

\*<sup>4</sup> HEV: Hybrid electric vehicle

## Environmental Efforts through Our Business Activities

Our business activities in product and technology development are also concerned with the promotion of energy and resource conservation, as well as the prevention of environmental problems.

### Optimization of Product and Development Operations

Through the promotion of virtual development and other methods, we are moving forward with optimization and streamlining of development operations, which in turn contributes to a reduction in resource and energy consumption.



#### ■ Reduction in Paper Use (FY 2003 actual results)

Conserved the equivalent of 1,420 trees.



#### ■ Energy Conservation Activities (FY 2003 actual results)

Conserved the equivalent of 14 days' worth of energy for 90,000 households in Atsugi City.

### Zero Emission of Waste

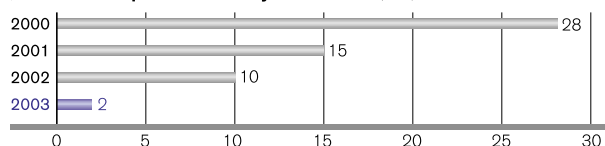
By separating our waste into 25 different categories and expanding our network of recyclers, we have worked to reduce the amount of waste sent to landfill and increase our recycling ratio.



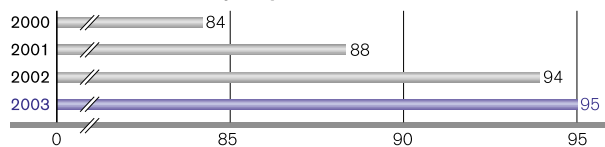
#### ■ Installation of Bio-waste Processing Equipment

Food waste from our cafeterias was previously incinerated, but equipment now being employed can convert biological materials into water and carbon dioxide gas within 24 hours.

▶ Waste Disposed Directly to Landfill (tons)



▶ Total Resource Recycling Rate (%)



### Environmental Preventive Measures

Within our place of business, we identify facilities, operations, or processes that have an environmental impact, and work to make facility and management improvements while performing periodic reviews.



#### ■ Training for Responding to Environmental Accidents

The Technical Center holds simulation emergency training sessions, including environmental accident scenarios, for each facility at least once a year. In fiscal 2003, we held 17 training sessions and looked for any weaknesses in our response to emergencies, for instance, in the transmission of information and protocol.

### FY 2003 Objectives and Results (Business Activities)

Objective Name	Target	Results	Comments
Compliance with environmental laws	No legal violations	+	Ensured by the establishment of corporate targets and enforcement through daily inspections and environmental patrols.
Environmental preventive measures	No environmental accidents* <sup>1</sup>	+	Ensured by improving facilities and lateral spread throughout the company of safeguards against minor incidents that may otherwise lead to serious environmental accidents.
Environmental Contributions through Business Activities	Achievement of registered items	+	By breaking down our business activities and examining possible environmental contributions, we succeeded in implementing proactive measures at each division.
Improving Waste Recycling	Over 96% recycling rate	-	Actual result: 95% Proceeded with recycling materials that used to be disposed of as waste. Moreover, the amount of waste itself was considerably reduced because of waste generation reductions. In fiscal 2003, identified recyclable items in order to manage the total amount of waste, as well as increase ratio of recycled materials.
Reducing Waste Generation	Over 2% reduction rate* <sup>2</sup>	+	Achieved by identifying recyclable items among waste and recycling them.
Reducing Paper Use	Reduction in paper use: 40% per person per month * <sup>3</sup>	+	Achieved by using projectors, double-sided photocopying, and shrinking documents to be copied.
Promoting Energy Conservation	Over 4% reduction in CO <sub>2</sub> emissions * <sup>4</sup>	+	Energy Conservation Committee identified and implemented new areas for energy conservation.
Communication with Local Communities and Authorities	No serious claims	+	Held information exchange sessions with local communities.
Fostering a Better Understanding and Awareness of Environmental Protection	100% participation in environmental management system training	+	Improve environmental education and engaged in events during Environment Month.

\*<sup>1</sup> Environmental Accident: A spill above legal requirements leaving company grounds \*<sup>2</sup> Reduction Rate: Compared with FY 2002 \*<sup>3</sup> Reduction Rate: Compared with FY 2001 \*<sup>4</sup> Reduction Rate: Compared with FY 2000

## Communication with the Community

### Events with Local Associations and Governments

We hold regular explanatory meetings and open houses for the local associations and governments of Atsugi and Isehara cities to familiarize them with our business operations and environmental efforts. In fiscal year 2003, we also offered them the chance to test-drive our FCV.



### Bus Terminal Cleanup Activities

Every month, we hold a cleanup activity for the area around the Aikou Ishida/Isehara bus terminal, which many of our employees use for commuting.



### "Innovation Festa"

We convened this festival to encourage a harmonious relationship with our community, during which we also introduced our environmental efforts. After the festival, the waste produced at the food stands was separated and collected, thanks to everyone's cooperation.



## Environmental Data

### Air Quality (Air Pollution Control Law and ordinances)

Unit: NOx: ppm, Soot and dust: g/m<sup>3</sup> N

Substance	Facilities	Legal Limits	Measured Value
NOx	Kerosene boilers (Installed before April 1, 1997)	150	102
	Kerosene boilers (Installed after April 1, 1997)	80	69
	Gas boilers	105	87
	Smelters	180	90
Soot and dust	Kerosene boilers	0.3	< 0.003
	Gas boilers	0.1	< 0.002
	Smelters	0.2	< 0.001

Measured values are the maximum measured values in FY 2003

### Wastewater Quality (Sewage Water Law and other ordinances)

Unit: mg/l (except pH)

Item	Legal Limits	Measured Values		
		Maximum	Minimum	Average
pH	above 5 - less than 9	8.4	6.6	7.2
BOD	< 600	500	1	57.6
SS	< 600	110	1	18.7
n-hexane				
Liquid petroleum	5	1	1	1
Fat and oil taken from plants and animals	30	7	2	3.2
Zinc	3	0.5	0	0.2
Nickel	1	0.5	0.1	0.1
Iodine	< 220	1	1	1
Smelttable metal	10	0.4	0.1	0.2
Soluble manganese	1	0.1	0.1	0.1

### PRTR Substances

Unit: kg/year

Substance number	Chemical substance	Amount handled	Air	Water	Transferred as waste	Landfilled by Nissan	Recycled	Chemically changed	Product
40	Ethyl benzene	22,741	1	0	4	0	0	22,736	0
63	Xylene	135,326	1,223	0	353	0	0	133,749	0
227	Toluene	186,332	2,596	0	59	0	0	183,676	0
299	Benzene	7,624	4	0	1	0	0	7,620	0
<b>Total</b>		<b>352,023</b>	<b>3,824</b>	<b>0</b>	<b>417</b>	<b>0</b>	<b>0</b>	<b>347,781</b>	<b>0</b>

• PRTR : Pollution Release and Transfer Register. This system calculates the extent to which the production, use, and storage of chemical substances result in the release and transfer of those substances into the environment. The PRTR Law was originally enacted in July 1999 in Japan. • According to PRTR law, raw materials that contain 0.1% or more of carcinogen (designated type 1 chemical substances) and those that contain 1% or more of other substances are measured. • As the figures are rounded to the first place, the sum of air, water, chemicals transferred as waste, or buried by Nissan, recycled, chemically changed, and made into products may not necessarily be the same as the sum of the amount handled or total.

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