# ENVIRONMENTAL REPORT 2002



Hino Motors, Ltd.

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#### **Corporate Profile**

#### HINO MOTORS, LTD.

#### Capital:

72.7 billion yen (as of March 31, 2002)

Number of employees: 8,583 (as of March 31, 2002)

#### **Products:**

Trucks, busses, special-purpose vehicles, small commercial vehicles, passenger cars, and engines

#### Truck and bus shipment quantity: 52,441 units

Production quantity of commissioned vehicles (excluding parts for overseas production): 141,045 units

#### Sales:

564 billion yen (FY2001)



#### **Offices and Plants**

**Head Office and Hino Plant:** 1-1, Hinodai 3-chome, Hino-shi, Tokyo 191-8660 Telephone: 81-42-586-5011

#### Hamura Plant:

1-1, Midorigaoka 3-chome, Hamura-shi, Tokyo 205-8660 Telephone: 81-42-579-0411

#### Nitta Plant:

10-1, Aza Hayakawa, Oaza Hayakawa, Nitta-machi, Nitta-gun, Gunma 370-0344 Telephone: 81-276-56-5111

Tamachi Office: 11-3, Shiba 4-chome, Minato-ku, Tokyo 108-0014 Telephone: 81-3-3456-8811

#### Ibaraki Gozenyama Proving Ground:

Aza Ookurayama 2023, Oaza Nagakura, Gozenyama-mura, Higashi-ibaraki-gun, Ibaraki 311-4613 Telephone: 81-295-55-3122

#### Hokkaido Memuro Proving Ground:

26-1, Omabetsu 14-sen, Memuro-cho, Kasai-gun, Hokkaido 082-0382 Telephone: 81-155-66-2511

Hidaka Delivery Center: 689-1, Kamikayama, Hidaka-shi, Saitama 350-1234 Telephone: 81-429-85-4747

#### **Oume Parts Center:**

5-1, Suehiro-cho 1-chome, Oume-shi, Tokyo 198-0025 Telephone: 81-428-32-9911

## Foreword



Business activities and management decisions are profit-oriented. However, the company also utilizes diligent consideration to protect the environment.

The company must always consider the most effective utilization of our Earth's finite resources for public benefit. In this sense, we can state that environmental protection activities have become more and more important in our company's management and operation.

Amidst a recently heightened interest in environmental concerns in Japan, many measures relevant to these concerns have been legislated. Progress has been made towards the ratification of the Kyoto Protocol, one of the most ambitious and sweeping attempts ever to deal internationally with the effects of global warming in history, in every industrialized country. Thus, the social pressure for industry leaders to go beyond even existing environmental legislation is intense.

Such being the background, Hino Motors is aspiring to rebirth, under the new slogan, "Renew Hino," for taking a new step forward.

Our primary product; the commercial vehicle, has undergone an innovative technological overhaul and the result is an advanced more economical and more environmentally friendly vehicle. One especially remarkable result of our hard work and dedication is the "Ranger-Pro," that is a full model change of Hino medium-duty trucks after the interval of 12 years. With this advanced and updated model in our dynamic line-up, we have successfully improved the fuel efficiency, transport quality, safety performance and drastically reduced particulate matter (PM) in exhaust gas emissions by mounting a newly designed engine. We are successful in taking the lead in complying with environmental requirements.

In our production activities, we have met almost each and every environmental objective that we have targeted. We have drastically reduced CO<sub>2</sub> emission, waste generation, etc. and are making steady progress towards achieving the specific environmental objectives that we have set for ourselves by FY2005. Besides, we have also established a strict control over the chemical materials, basing on the PRTR (Pollutant Release and Transfer Register) Law.

In logistics, sales, after-sales of vehicle and final disposal of discarded vehicles; we are making every possible effort to act responsibly and conform to the Fluorocarbons Recovery and Destruction Law and the Automobile Recycling Law.

For our ongoing commitment to these environmental protection activities, we will strive to meet the objectives set up to FY2005, which shall be known as the, "Hino Motors Environmental Voluntary Plan."

This report is intended to provide a greater understanding of our comprehensive environmental protection activities and thus to serve as the most important source of reference for those wishing to know more. Your comments and suggestions are most welcome and will be greatly appreciated.

October 2002

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**Tadaaki Jagawa**, President, Member of the Board Chairman, Hino Environment Committee, Hino Motors, Ltd.



Hideaki Jobita

Hideaki Tobita Senior Managing Director, Member of the Board in Charge of Environment Issues



Takayuki Suzaki

Takayuki Suzuki Senior Managing Director, Member of the Board in Charge of Environment Issues

Hino Motors has a firm commitment to everyday life of people around the world through its products, trucks and buses.

For the contemporary society, motor vehicles are indispensable for people's life as a tool to transport the wealth and comfort.

Motor vehicles have various environmental impact through their whole lifecycle: development, production, operation, and disposal.

## **Vehicle Performance, for the Environment**

Hino motors has been looking for ways of business activities less affecting the environment by diesel engines that are emitting NOx (nitrogen oxides) and PM (particulate matter) as well as by its production processes. We are also working for effective utilization of resources relating to whole lifecycle of the motor vehicle.

We, as a leading manufacturer of diesel engine vehicles, reaffirm our commitment to contribute our technologies to the global environment.

## Hino Motors' Business Activities and Their Environmental Impact

**Production** 

### **Recycling and Scrapping**

Discharge of shredder dust Discharge of industrial wastes Use of substances with an environmental impact Resource and energy consumption Discharge of industrial wastes Emission to atmosphere and water Use of substances with an environmental impact

**Design and Development** 

Exhaust gas emissions

Fuel consumption Noise pollution

**Product Use** 

Resource and energy consumption Discharge of industrial wastes Use of substances with an environmental impact

#### Procurement

Exhaust gas emissions Fuel consumption Noise pollution Product packaging wastes Logistics





## **Company-wide Environmental Management**

Positioning the global environment as its important management issue and under the corporate philosophy "to contribute to the development of a more prosperous and comfortable society by providing the world with a new set of values," Hino Motors is promoting environmental protection measures through company-wide actions; established in March 1993 "Hino Global Environment Charter," Hino's fundamental policies on the global environmental protection, as well as "Hino Motors Environmental Voluntary Plan," its specific action plans.

## Promoting Organization

In order to promote effectively and steadily the action plans for environmental protection, Hino Motors established in March 1993 "Hino Environment Committee" chaired by the president as a system for promoting company-wide initiatives, and two subordinate committees; "Environment Technology Committee" and "Production Environment Committee" for area-specific activities. In March 2002, Hino established "Recycling Committee" to promote action assignments related to enacting the automobile recycling laws and to study the potential of related new businesses, and "Sales Companies Environment Committee" to enhance the environmental management system of Hino group.



### \* Renamed Environment Technology Committee

## **Targets and Activity Results in FY2001**

#### 👂 Management

Item	Action Policy	Target for FY2001	Activity Results
Comprehensive environmental management	• Expand and supplement an applicable range of the environmental management system.	· Acquiring the certification at Oume and Hidaka	· Certification acquired in physical distribution function both at Oume and Hidaka.
Environmental accounting system	· Establish and operate the envi- ronmental accounting system.	· Improving the accuracy and more thorough coverage of the environmental accounting system	·Accuracy improved, quantitative effect calculated.
Suppliers' cooperation	• Acquire ISO 14001 certification on a broader scale.	<ul> <li>· ISO 14001 certifications acquired by 23 companies of domestic affiliated companies environment subcommittee members (more than one business establishment per company).</li> <li>· ISO 14001 certification acquired at overseas main production sites.</li> </ul>	<ul> <li>Certification acquired by 11 companies; in total 17/23 companies.</li> <li>Certification acquired by Hinopak Motors, Ltd. (Pakistan).</li> </ul>
	· Promote green procurement and purchasing.	Expanding green procurement of parts     Expanding green purchasing of office supplies and equipments	Delay in publishing "Green Procurement Guideline" (issued in September 2002).     "Green Purchasing Guideline" published and expanded. 98% change-over completed.



Item	Action Policy	Target for FY2001	Activity Results
Sales companies' cooperation	· Promote establishment of an environmental management system for sales companies.	· Publishing "Environmental Guideline for Sales Companies"	· Delay in publishing (issued in July 2002).

## 🔵 Research & Development

Item	Action Policy	Target for FY2001	Activity Results
Fuel efficiency	• Secure top-level efficiency in all vehicle classes in each country and region by developing element technology and vehicle control technology.	· Drafting and expanding the concept of fuel efficiency improvement technology	• Newly developed model launched with small engine displacement and high power 5- cylinder turbo-intercooler engine: Fuel efficiency drastically improved.
Exhaust gas emissions	Achieve a breakthrough in clean emission performance for diesel engines.	·Starting full-scale development of new short-term regulation + PM phase-in	<ul> <li>Concept formulated and established for new short-term regulation + PM phase-in.</li> <li>Tokyo Metropolitan Government approval is acquired by "PM trap" that enables to reduce PM of vehicles in the market.</li> </ul>
Clean-energy vehicles	· Positively develop the clean- energy vehicles and expand its sales.	· Establishing basic strategies	· Power-up and model diversification of CNG vehicle studied.
Recoverability	• Promote development of recy- cling designs that can contri- bute to a vehicle recovery rate of 95% by 2015.	Incorporating recycling design to vehicles     Market survey of dismantling	<ul> <li>Recoverability 90% or above achieved by new model "Ranger-Pro." Expanding 3R as design standard</li> <li>10 dismantling companies surveyed, situation and problems recognized.</li> </ul>
Substance of environmental concern	• Efforts to control chemical sub- stances and promote actions to become top-class in this field.	· Selecting substances subject to control and preliminary check, establishing reduction measures and action plans	· Use of mercury, cadmium and arsenic abolished, promoting survey to reducing use of hexavalent chromium.
	· Reduce the substances of envir- onmental concern.	·Achieving lead reduction 1/2 below 1996 levels and working on to achieve 1/3 reduction	·Use of lead: Reduction goal of 1/3 below 1996 level studied.
Automobile noise	·Upgrade product value by further reducing automobile noise.	· Introducing next step noise regulation compliance model to the market	· Regulation compliance model "Ranger-Pro" launched and introduced.
Fluorocarbons	· Reduce refrigerant in vehicle.	·Completing development to reduce HFC134a gas 10% below FY1995 levels	·Refrigerant reduced from 800g to 500g per vehicle by new model "Ranger-Pro." Target achieved by all models.

## Production and Logistics

Item	Action Policy	Target for FY2001	Activity Results
Global warming	· Promote active CO <sub>2</sub> reduction measures.	· Reducing CO <sub>2</sub> emissions per sales 1% below FY2000 levels	$\cdot CO_2$ emissions per sales: Reduced 13% below FY2000 levels.
Substances of environmental concern	· Reduce PRTR substances.	<ul> <li>Reducing materials subject to PRTR 5% below FY1998 levels</li> <li>Reducing VOC emissions 57 g/m<sup>2</sup> or below at body production line average</li> </ul>	<ul> <li>Materials subject to PRTR: Reduced 53% below FY1998 levels.</li> <li>VOC emissions: 58 g/m<sup>2</sup></li> </ul>
Wastes and resources	• Reduce waste aiming for achieve- ment of zero emissions and pro- mote resource conservation ac- tivities.	·Reducing combustible wastes 40% below FY1990 levels	• Combustible wastes: Reduced 43% below FY1990 levels.
Water resources	· Reduce water consumption.	· Reducing water consumption per vehicle 3% below FY2000 levels	·Water consumption per vehicle: Reduced 3% below FY2000 levels.
Logistics	• Actively promote logistics ratio- nalization aiming to reduce CO <sub>2</sub> emissions and packaging and wrapping material waste.	<ul> <li>Reducing CO<sub>2</sub> emissions 3% below FY2000 levels</li> <li>Reducing packaging and wrapping materials usage 5% below FY2000 levels</li> </ul>	<ul> <li>CO<sub>2</sub> emissions checked and calculation method studied.</li> <li>Total usage of packaging and wrapping materials: Reduced 25% below FY2000 levels.</li> </ul>

## **Actions Concerning ISO 14001**

## Hino Motors' Activities

Hino Motors acquired ISO 14001 certification by March 2001 at head office functions, product development, production engineering, and all domestic production plants. In FY2001, Oume parts center and Hidaka delivery center were integrated in the function of logistics and these two centers acquired ISO 14001 certification on January 11, 2002.

In establishing EMS (Environmental Management System), function-oriented system is adopted to streamline the logistics as core business activities. Thus, appreciable results were realized in reducing the environmental impact and related expenditures. All domestic offices are working on to acquire ISO 14001 certification by FY2005.



ISO 14001 Certification Award Ceremony

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Hamura Plant		Certifie	 d on March 10 	), 1999					
Nitta Plant			Certifie	d on March 27	7, 2000				
Head Office and Hino Plant				Certifie	d on March 24	  , 2001			
Oume Parts Center and Hidaka Delivery Center				(	Certified	on January 1	1, 2002		
Other Domestic Offices								Scheduled to certified in M	be larch 2006

#### Certification Status

## Environmental Audit

To check if EMS is properly implemented, Hino Motors conducts an internal environmental audit. Evaluation of the conditions check and the observance of related regulations and laws are directly linked to the improvement. At the same time, the audit results are reported to Hino Environment Committee.

In FY2002, updating assessment was conducted in Hamura Plant. No serious or minor non-compliances were enumerated.

External surveillance inspections were conducted in FY2001 at Hino Head Office and Hino Plant, and Nitta Plant. Any serious non-compliances were not enumerated. Immediate countermeasures were taken for the enumerated minor non-compliances.





## **Affiliate Companies' Activities**

## Domestic Affiliate Companies' Activities

To enhance the environmental protection activities, it is also important that all parts suppliers collaborating with Hino understand well the concept of the environmental protection. For this purpose, Hino Motors support the domestic affiliate companies' activities.

The activities are conducted by "Domestic Affiliate Companies Environment Subcommittee" consisting of main 23 parts suppliers.

In FY2001, newly 11 companies acquired ISO 14001 certification. Thus the total number of certified companies was 17 out of 23 committee members. Remaining 6 companies are working to acquire the certification by the end of 2003.

As a specific action to reduce the environmental impact, "Energy Saving Workshop" was held. At the

workshop, each company visited at site, picked out the items of energy saving measures, and checked the actual situation in achieving the target. Regarding the other main 241 parts suppliers, 65% of them have already acquired the certification and the remaining 35% were requested to acquire ISO 14001 certification by the end of FY2005.

In September 2002, Hino Motors established "Procurement Guideline relating to Environment" focusing on "Establishing Environmental Management (acquisition of ISO 14001 certification)" and "Controlling and reducing the substances with environmental impact (observance of the PRTR Law)" to work on overall and further reduction of environmental impact and requested all parts suppliers to cooperate in line with this guideline.

### Certification Status

	1998	1999	2000	2001	2002	2003	2004	2005	2006
			1						
Domestic Annates (25 companies)	Scheduled to	be certified in	March 2002						
Main Domestic Suppliers (241 companies)									
Main Domestic Suppliers (241 companies)				Scheduled to	be certified	in March 2000	3		

Domestic Affiliates	Certified Year and Month
Sawafuji Electric Co., Ltd.	December 1997
Musashi Pressworking Co., Ltd.	December 2000
Showa Aircraft Industry Co., Ltd.	J anuary 2001
Takebe Tekkosho Co., Ltd.	March 2001
Shiroyama Kogyo Co., Ltd.	March 2001
Hino Tsusho Co., Ltd.	March 2001
Horikiri, Inc.	May 2001
Shimizu Co., Ltd.	May 2001
Koshin Seikosho, Ltd.	October 2001
Sankyo Radiator Co., Ltd.	October 2001
Sanwa Seiki, Ltd.	November 2001
Hino Engineering Annex, Ltd.	J anuary 2002
Hino Logistics & Packing, Ltd.	J anuary 2002
Sohshin Co., Ltd.	March 2002
Riken Forge Co., Ltd.	March 2002
Hino Auto Body, Ltd.	March 2002
Chiyoda-unyu Co., Ltd.	March 2002

## Affiliates Already Acquired ISO 14001 Certification (17 companies out of 23)



Energy Saving Workshop

#### Overseas Affiliate Companies' Activities

"Overseas Affiliated Companies Environment Subcommittee" consisting of 5 companies manages the environmental management activities in each country and region and supports ISO 14001 local staff training.

In June 2001, Hinopak Motors, Ltd. (Pakistan) acquired ISO 14001 certification following to Hino Motors (Thailand), Ltd. that acquired the certification in March 2001.

This is the first certification award in Pakistan for the companies related to the automobile.



HINOPAK MOTORS, LTD. ISO 14001 Certification Award Ceremony

#### Certification Status

		1998	1999	2000	2001	2002	2003	2004	2005	2006
Overseas Affiliates	<b>Thailand</b> Hino Motors (Thailand), Ltd.				Certifie	ed in March 20				
	<b>Pakistan</b> Hinopak Motors, Ltd.				Cer	 tified in June 	 2001 			
	<b>Vietnam</b> Hino Motors Vietnam, Ltd.						Scheduled to	be certified ir	n March 2004	
	Indonesia PT Hino Indonesia Manufacturing						Scheduled to	be certified ir	March 2004	
	Philippines Pilipinas Hino Inc.						Scheduled to	be certified ir	March 2004	

### Domestic Sales Companies' Activities

"Environment Guideline for Sales Companies" was presented to all domestic sales companies in July 2002. This compiles Hino Motors' own requirements of the environmental management. The compliance of each sales company to this guideline will be assessed and a sales company being successful to comply with all items of the guideline will be approved as "Eco-Management Dealer".

All sales companies started the activities based on "Environment Guideline for Sales Companies". ISO 14001 certification was awarded to Nagano Hino Motors in November 2001 for the first time for domestic heavy-duty vehicle dealers, and to Gunma Hino Motors in July 2002 for the first time for vehicle dealers within Gunma prefecture.





Nagano Hino Motors ISO 14001 Certification Award Ceremony



## **Environmental Education and Awareness-Promotion Activities**

To enhance individual employee's awareness for the environmental protection, practice is required. Thus, we implement the environmental education and awareness-promotion.

From FY1994, the training program for new employees includes environmental education where

## Training Program (for FY2001)

Course	Number of attendants
Environmental Education for New Employees	42
General Education on Environment	59

new employees develop the consciousness of duty to get involved in the automobile industry.

In February, Energy-Saving Month, the third company-wide energy saving presentation meeting was held.

### Employees with Environment-related Qualifications (as of March 2002)

Environment-related Qualification	Number
Environmental Management System Auditors	6
Pollution Prevention Supervisors	90
Energy Supervisors	15

## **Green Purchasing**

For actively promoting more green purchasing of office supplies and equipments used in Hino Motors, we made and implemented in September 2001 "Green Purchasing Guideline" and "Green Purchaging Promotion Plan" based on the "Law on Promoting Green Purchasing" compiled by the Ministry of the Environment. The green purchasing ratio as of March 2002 was 98% in total, achieving the target of the action plan.

### Green Purchasing Ratio

		[Unit: %]
Item	September 2001	March 2002
Office Supplies	60	97
Office Equipments	70	100
Total	62	98

## **Emergency Response, Accidents Related to the Environment**

For safety operation of the plant and reduction of the environmental impact, we established proper operation standards and work standards to maintain and control the steady operation.

"Necessary Measures against Emergency" is estab-

lished for taking systematic and effective measures in case of an emergency. Periodic emergency response training is also conducted.

There were no accidents related to the environment in FY2001.

## Lawsuits and Product Recall

On the trial is one lawsuit relating to effects on health from automobile exhaust gas emissions. There were no recalls related to the environment in FY2001.

## **Environmental Accounting**

Hino Motors is planning to introduce Environmental Accounting as a criterion for making management decisions. The purpose is to implement effective environmental protection investments and to continuously reduce the environmental impact by monitoring precisely the cost-effectiveness of the activities.

The table below shows the environmental costs compiled and classified by Hino Motors based on "Guideline for Introducing the Environmental Accounting System" provided by the Ministry of the Environment. The total amount of the environmental protection costs in FY2001 was 20.4 billion yen (3.6% of the total sales value). Regarding the equipment investment that is difficult to be distinguished between environmental and non-environmental costs, only those that can be clearly identified as for environmental protection purposes are accounted in the table.

In terms of the environmental protection effect, only those that can be verified by the clear evidence are calculated as effects within a single fiscal year. Specifically, the total environmental protection effect for FY2001 was calculated 126 million yen that includes the reduction of energy costs by energy saving and the reduction of disposal costs by reducing the wastes.

[] Init: One million yes (Itoms marked by a deab ( ) are under one million yes )]

#### Environmental Protection Costs

		(items marked	i by a dash (	) are under on	c minor ycm.)	
	lto m	FY2	000	FY2001		
	item	Investment	Expense	Investment	Expense	
	Costs for pollution prevention, including atmospheric and water pollution					
1. Business area costs	Costs for the protection of the global environment, including energy saving equipment	139	653	141	794	
	Resource recycling costs, including recycling and waste treatment					
2. Upstream/downstream	Costs for appropriate product recycling, recovery and treatment					
costs	Additional costs for efforts to reduce environmental impact	_	—	_		
	Costs for establishing and operating EMS and acquisition of ISO certification			_	333	
3. Management activity costs	Costs for monitoring and measuring environmental impact	_	351			
	Personnel costs for environmental protection measures organization					
4. Research and	R&D costs for environment-friendly products		15 500		19,170	
development costs	R&D costs for controlling environmental impact	_	15,500	_		
5. Social activity costs	Costs of environmental improvement measures, including protection of the natural environment and greening	_	8	_	7	
	Costs for environmental information disclosure					
6. Environmental damage	Costs for restoring destruction of the natural environment					
costs	Insurance premiums for measures in case of environmental damage	_	—	_		
	Tatal	139	16,512	141	20,304	
	TOTAL		16,651		20,445	

· Scope of compilation: Only within Hino Motors

Period covered: April to March

#### Environmental Protection Effects

Economical Effects	[Unit: o	ne million yen]
Item	FY2000	FY2001
Reduction in energy costs	58	119
Reduction in waste processing costs	5	7
Total	63	126

· Scope of compilation: Only within Hino Motors

Period covered: April to March

Environmental Effects

Item	FY2	2000	FY2	2001
Reduction of CO2 emissions	2,327	[t-CO2]	4,797	[t-CO2]
Reduction of waste	1,655	[t]	50	[t]

· Scope of compilation: Only within Hino Motors

· Period covered: April to March



	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 (year)
	OHin	o Motors Gree	○Hino Glo is establi ○Hino Glo Action Pl ○Hino Env n Fund is esta	bal Environme ished. bal Environme lan is establish vironment Con bblished.	ent Charter ent ned. mmittee is forn	O Hino Globs Action Pla ned.	al Environmen n is revised. O E is	it Environmental s established.	Affairs Divisio	OFirst Repo	OHino Glob is revised. OHino Moto Plan is est Environmenta t is issued.	al Environment Charter rs Environmental Voluntary ablished. al O Recycling Committee is established. O Sales Companies Environment Committee is established.
									⊖Hamura Pl ISO 14001	ant acquires certification. O Nitta Plan ISO 1400	⊖ Head Of acquire 1 at acquires I certification.	fice and Hino Plant ISO 14001 certification. O Oume Parts Center and Hidaka Delivery Center acquire ISO 14001 certifications.
	OHybrid d motor ve	liesel engine-e hicle is introd	lectric OPre uced. acc OEnviron Commit	eliminary evalt cording to the A ment Technolo tee is formed.	uation guidelii Automobile Re ogy ○Replaceme air-conditi ○Vehicle e Fuel Inje	ne is issued ecycling Law. nt of CFC12 f oner with HF( equipped with ection System	or automotive C134a is compi Common Rail is launched.	OVoluntary recycle end	Action Plan, a d-of-life vehicle	n initiative to 25, is announce OVehicle equ System is l	cd. nipped with Pu aunched.	First 5-cylinder Turbo Intercoler Engine Truck is launched. llse EGR
C	Cogeneration installed in F	is Iino Plant. OHamura ( OFull pl mold-r CFC11	Clean Center is nase-out of cas eleasing agent 3	s completed. ting OFull pl t for par	Cogeneration installed in H nase-out of tric ts cleaning	No. 2 is Iamura Plant.		O Chemic: System O Init Equ	al Substance C is established. ial Evaluation ipment is esta Small size inc the operation	ontrol System for in blished. inerator stops as measures t	stalling o dioxin.	
			() Product	ion Environme	ent Committee	is formed.	OCasting Sa is installed	nd Recycling S in Nitta Plan	System t.			

## **History of Environmental Actions**

# **Activities in the Product Area**



Takayuki Suzuki Senior Managing Director, Member of the Board Chairman, Product Environment Committee

Hino Motors has placed, as a top-level management priority issue, the reduction in emission levels of NOx, PM (particulate matter) and black smoke from diesel engines as well as a further decrease in CO<sub>2</sub> emission levels which is the main advantage of the diesel engine, as effective measures for preventing the global warming. Thus, we have worked on various technological developments to ensure the compatibility between, "Environment and Performance."

Our medium-duty truck, "Ranger-Pro," our first complete model change in 12 years introduced in December 2001, is equipped with the comprehensive results of years and years' worth of technological developments, including a common-rail fuel-injection system, VG turbo system, EGR technology and an electronic controlling technology for all of these new systems. This model was successful in achieving an immensely greater fuel efficiency which directly effected a reduction in CO<sub>2</sub> emission, easily clearing the regulatory requirements relating to exhaust gas emissions.

Moreover, this model was also successful in clearing the noise regulations set for 2001. The recoverability and environmental performance, including reduction of substantial environmental concern were also improved with this model.

We will continue to promote our product development and introduce new lowemission and low-noise vehicles into the market by refining our proven and advanced diesel technology.

## **Improving Fuel Efficiency**

### **Common-Rail Fuel-Injection System**

In 1995, Hino Motors pioneered to adopt and massproduce this fuel-injection system for medium-duty truck "Ranger." Since then, we continued to refine this system. Our newly full model change "Ranger-Pro" is equipped with the system incorporating the most advanced technology.

The feature of this excellent fuel-injection system is to store high-pressured fuel in the common-rail and to inject it into each combustion chamber from the electronically controlled injector.

This enables high-pressure fuel injection according to the engine load from low to high engine speed by controlling the timing, volume, and pressure of the fuel injection quite independently from the engine revolution. Thus, the fuel efficiency is improved by clean and superior fuel combustion. Today, this system is adopted to the main models including heavy-duty vehicles.

### Turbo Intercooler (TI)

Japan's first 5-cylinder turbo intercooler engine (J07C-TI) that was newly developed for "Ranger-Pro" retained the same output performance as of conventional 6-cylinder engine and realised a drastic fuel efficiency by downsizing of the displacement.

This is the comprehensive result of turbo technology accumulated for long years.

"VG (Variable Geometry) turbo" that is adopted for the heavy-duty truck "Super Dolphin Profia" enables to optimize the air volume according to the engine revolution and load by adjusting the variable nozzle angle and controlling the turbo revolution. Because the intercooler lowers the engine intake air temperature, the combustion temperature is lowered to realise the reduction of NOx emission and the further improvement of fuel efficiency.





5-cylinder in line, with common-rail fuel-injection system, turbo intercooler engine Displacement: 6.634 L 165 kW (225 PS)

## Expanded Use of the Idling Stop System

This system was first developed for improving the fuel efficiency of route buses. To comply with the ordinance of various municipalities including Tokyo Metropolitan Government that restricts the idling of engine while stopping the vehicle, the idling stop system was newly developed. This system automatically stops the engine by simple operation to set the shift lever at the neutral position. This system is now adopted not only for route buses but also for sightseeing buses and trucks that mainly drive within the city.

This system improves the fuel efficiency and reduces the exhaust gas emissions and vehicle noise.





#### Other Energy Saving Activities

The development of high fuel efficiency vehicle includes not only the engine, but also reduction of air resistance such as improvement of body style, aero-bumper, wind deflector as well as weight saving of the vehicle and appropriateness of the power line series. In addition to such hardware improvement, the activities below are also implemented for better fuel efficiency.

#### **◆** Transport Simulation Service

In order to obtain useful data for selecting the most suitable vehicle and improving the transport method, computer aided transport simulation service is available. This is to simulate the transport operation based on the customer's vehicle operating condition, vehicle performance, and accumulated road data across the country. In FY2001, about 200 cases were simulated for this information service.

### **Ecology Heater and Cooler**

Hino Motors main products; trucks are in continuous service all day long for transport across the country. For assuring the transport safety, driver's rest in the middle of travel is therefore important.

Ecology heater makes it possible to heat while the engine stops. Combustion type ecology heater is provided for long haulage heavy-duty trucks. For new medium-duty truck "Ranger-Pro," an electric pump type ecology heater is provided.

For cooler, regenerative coolant is used for cooling the bedroom while the engine stops. This maintains the comfort in the cabin and contributes to further reduction in CO<sub>2</sub> emissions, exhaust gas emissions, and vehicle noise.



#### Energy Saving Driving Training

The vehicle fuel consumption varies considerably according to the operating condition. Energy saving driving training courses are held in various parts of the country to introduce the driving technique know-how to draw the maximum performance of the vehicle on the real vehicle.

This energy saving driving training course is very much appreciated by the participated customers saying, "This is useful also for safety driving as well as energy saving."



## **Reducing Exhaust Gas Emissions**

### Regulatory Trends of Diesel Vehicle Exhaust Gas Emissions



From FY2003, "New short-term exhaust gas emissions regulation" making compulsory about 30% reduction regarding PM will be put in force. "New long-term exhaust gas emissions regulation" making compulsory the emission reduction down to about 1/10 of current emission values is now under preparation.

Hino Motors is working on the research and development to clear this very difficult regulatory requirement by evolving the technology accumulated for long years.

The Ministry of Land, Infrastructure and Transport has started "Low-emission vehicle approval system" and "Ultra low PM emission diesel vehicle approval system" to promote the development and progress of low-emission diesel vehicles. Hino Motors is challenging to obtain upper class approval of these systems together with the effort to complying with the exhaust gas emissions regulation.

### Pulse EGR System

EGR (Exhaust Gas Recirculation) system is an effective device to reduce NOx by recirculating the exhaust gas into the combustion chamber irrespectively to whether or not the engine is supercharged to reduce the oxygen concentration in the combustion chamber and to assure gradual combustion that lowers the combustion temperature.

New "Ranger-Pro" is also equipped with EGR system. Electronically controlled fuel injection system is incorporated in this system for optimal operation to reduce the exhaust gas emissions.

"Pulse EGR system" adopted for heavy-duty truck "Profia" is the world's first innovative system that has evolved ordinary EGR. This system temporarily opens the exhaust valve at intake stroke of the engine and adversely introduces some portion of the exhaust gas directly into the cylinder. Compared with the conventional outer piping structure, "Pulse EGR system" needs no outer piping or adjusting valves. Thus, the structure is simplified to assure the improved reliability and weight saving. Besides, since the throttle valve in the exhaust system is unnecessary, deterioration of fuel efficiency due to the exhaust resistance of the throttle valve can be prevented.

## PM Trap<sup>\*1</sup>

PM (particulate matter) contained in the exhaust gas is reduced drastically by improved combustion system of engine and by reduction in the sulfur content in fuel. As an additional measure for reducing PM, we have developed "PM Trap." This device drastically reduces PM by oxidizing PM contained in the exhaust gas by using catalyst and converting PM into CO<sub>2</sub> and water vapor.

This "PM Trap" has a compact structure applicable to the wide range of vehicle models. Its material being stainless steel assures high corrosion resistance.

We are working on to refine the performance of "PM Trap." For the future, we will combine our diesel engine technology and new catalyst technology DPNR<sup>\*2</sup> developed by Toyota Motor Corporation to make out clean engine unit creditable for 21st century engine and work on for its practical application development.

\*1 "PM Trap" An oxidation catalyst, name of muffler incorporating this oxidation catalyst made by Hino Motors

\*2 "DPNR" A catalyst system that continuously depollutes both NOx and PM by combining newly developed porous ceramics structure and NOx occlusion reduction catalyst.





## Low-Emission Vehicle Designation System Enforced by Municipalities

Hino Motors responded actively to both "Low-Emission Vehicle Designation System" enforced by seven municipalities in Kanto region and "LEV-6 Designation System" enforced by six municipalities in Kansai region. 17 models of LPG, CNG, and hybrid (HIMR) vehicles are designated for these systems as mainly vehicles operating within the cities including light-, medium-, and heavy-duty trucks and route buses.

Regarding the diesel engine vehicle equipped with reliable oxidation catalyst, 65 models are approved by "LEV-6 Designation System". For Kanto region, we are waiting for the designation due to the revision of approval standard. (As of March 2002)



### Diesel Vehicle Exhaust Gas Emissions Regulation of Tokyo Metropolitan Government

Starting from October 2003, operation in the Tokyo Metropolitan will be prohibited for the diesel vehicles not complying with the PM (particulate matter) emission standard enforced by the government ordinance.

Hino Motors' "PM Trap" was approved as PM reduction device applicable for the vehicles already operating on the road after FY1995 regulation (KC type).



## **Reducing External Vehicle Noise**

For reducing vehicle noise, Hino Motors has developed various measures. One is reducing the noise coming from the noise sources such as engine and power train by improving the combustion system and structure employing the advanced analysis technology. Another is suppressing the noise by optimal layout of noise absorbing and insulating materials. Noise reduction technology accumulated by now is incorporated in the turbo intercooler engine (J07C-TI) newly developed for new medium-duty truck "Ranger-Pro." This technology includes common-rail fuel-injection system, improved cylinder block, reinforced noise insulating cover, low-noise muffler, etc. Thus, this model successfully cleared the 2001 noise regulation by its low-vibration and low-noise performance. We are working on to extend and apply this technology to the heavy-duty trucks in order to meet the noise regulation in the future.

Model		Regulation requirement dB(A) Current → New regulation	1998	1999	2000	2001	2002	2003	<ul> <li>Regulation for new models</li> <li>Sales limit for</li> </ul>
Heavy-duty	All-wheel drive vehicles	83→82				10		9	previous models
vehicles GVW > 3.5t	Trucks	83→81							
Over 150kW	Buses	83→81	10	9					
Medium-duty	All-wheel drive vehicles	83→81				10	9		
vehicles GVW > 3.5t	Trucks	83→80							
150kW or below	Buses	83→80			10	9			

#### Trends in Acceleration Noise Regulation

## **Developing Clean-Energy Vehicles**

### Hybrid Vehicles

#### HIMR [Hybrid Inverter Controlled Motor & Retarder System]



HIMR system is the world's first diesel-electric hybrid system accomplished by Hino Motors in 1991. Since then various improvements have been accumulated on this system. The two bus models equipped with HIMR system: "Blue Ribbon HIMR" launched in September 2001 followed by "Selega HIMR," adopted the common-rail fuel-injection system and oxidation catalyst muffler and successfully cleared the requirements of new shortterm exhaust gas emissions regulation. The fuel efficiency was also drastically improved by adopting nickel-metal-hydride batteries.

Hino Motors developed in May 2002 new hybrid system aiming at drastic improvement in fuel efficiency and low-emission. This new system is an innovative hybrid system that integrates the advantages of conventional Series<sup>\*1</sup> and Parallel<sup>\*2</sup> Hybrid Systems by employing one-way clutch and one motor. New electric storing device and improved generator realized an innovative improvement in fuel efficiency and a drastic reduction of exhaust gas emissions.

\*1 "Series Hybrid System"

- This system drives the vehicle by an electric motor whose power is generated by the generator directly coupled with the engine.
- \*2 "Parallel Hybrid System"

This system drives the vehicle by both the engine and the electric motor.



## LPG (Liquefied Petroleum Gas) and CNG (Compressed Natural Gas) Vehicles

LPG and CNG vehicles have excellent properties such as low emission level of NOx, PM, and black smoke, low-noise, etc.

Hino Motors produces LPG and CNG vehicles for light-duty truck "Dutro," CNG vehicle for mediumduty truck "Ranger" and route bus "HU".

Both types require a large-capacity reservoir because the fuel is gas. This limits the cruising distance. Nevertheless the infrastructure required for fuel supply is steadily developed. We are studying to expand to various model types focusing on the vehicles operating inside the city.

### Models Conforming to the Law on Promoting Green Purchasing

Four models below now conform to the Law on Promoting Green Purchasing enforced in April 2001. (As of March 2002)

◆Light-duty truck
Dutro, CNG5 models
♦ Medium-duty truck
Ranger, HIMR1 model
◆Large-size route bus
Blue Ribbon City, HIMR4 models
Blue Ribbon City, CNG1 model
◆Large-size sightseeing bus
Selega, HIMR1 model

For detailed specifications of the vehicles, please visit our Web site.

### Researching Other Next-Generation Fuels

Hino Motors is also actively making researches on other next-generation fuels.

Now, based on HIMR system and commissioned by the Ministry of Economy, Trade and Industry, we are studying the development of engine that is fueled by the next-generation fuel; DME (Dimethyl Ether). Hino Motors jointly with Toyota Motors Corporation developed a large-size bus equipped with fuel cell hybrid system which uses high-pressure hydrogen.



## CNG Eco-Station Directly Managed by Hino Motors

Hino Motors opened CNG fueling station "Hino Motors Eco-Station" along Koshu-kaido road next to the head office in Hino city, Tokyo. This station supplies CNG fuel including for general public vehicles.

This station is devoted to diffusion of CNG vehicles in the west of Tokyo where the number of CNG fueling stations is limited compared to inside Tokyo.



Hino Motors Eco-Station Supply capacity: 250 Nm<sup>3</sup>/h (For about 50 units of light-duty truck or 40 units of mediumduty truck per day)

## **Promoting Recycling**

In July 2002, the Law Concerning Recycling Measures for End-of-Life Vehicles (Automobile Recycling Law) was enacted (to be enforced in December 2004). This law is to enforce the responsibilities of concerned parties commencing with automobile manufacturers to assure appropriate recycling and disposal of used vehicles. As the same as "Home Appliance Recycling Law" already enforced, the user is to bear a part of expenses of recycling or disposal.

Automobile Recycling Law is gearing toward CFCs, airbags, and Automobile Shredder Residue (ASR) that generate serious environmental impact at disposal.

Hino Motors established "Recycling Committee" in March 2002 to promote the recoverability improvement activities more vigorously and effectively than ever before.



### Recoverability Rate

Regarding the recoverability rate of new models, 90% or above of voluntary target was completed on chassis-with-cab condition. We are also working on the improvement of effective recoverability rate taking account of the recycling condition of the existing end-of-life commercial vehicles. Survey was conducted on vehicle dismantling companies (10 companies were surveyed in FY2001.) This result helped us to understand the real situation of effective recoverability rate and the issues for improving the recoverability.



Survey on Dismantling the Vehicles



## Product Design Taking Account of Dismantling and Recycling

#### Preliminary Material Evaluation

Automobile Recycling Law was revised in April 2001. Based on this revision, Hino Motors established the design guideline covering the prior evaluation of Recycling (reutilization as material) being promoted since years, Reducing (reduction of generated wastes) and Reusing (reutilization as products and parts) being added at this time's law revision as well as the results of survey on the dismantling companies. We are working on this to expand to the design standards.

#### Using Materials Easy to Recycle

Including the multi-ply components made from a number of materials, we replaced thermosetting

resin and rubber materials with thermoplastic resin materials that have better recycling efficiency. We are working to unify the grade of PP resin used for interior plastic parts such as instrument panel and console box with TSOP (Toyota Super Olefin Polymer) material at the core. Conventional ABS risen + polyurethane coated material has been improved to newly developed lustrous AES (nonpainted). This material was also used for door garnish, radiator and bumper grille of heavy-duty trucks, and radiator grille of "Dutro," a recently model-changed light-duty trucks.



Radiator Grille of "Dutro"

#### Expanded Use of Recycled Materials

Hino Motors considers the expanded use of recycled material as an important element to vitalize the recycling activities.

As specific examples of this expanded use, we used recycled felt for backside felt of floor mats. For the gate panels of light-duty truck "Dutro" and the interior trimming of new medium-duty truck "Ranger-Pro," we used a material mixed by natural material Kenaf. We also used a recycled urethane resin for seat cushion (a part of backrest), and a plastic bumper recycled material for battery cover.

We have not yet started to use, but are studying the recycling engineering for FRP resin, nylon alloy resin for outer panel, and wood material that is widely used for truck rear body.



Interior Trimming of "Ranger-Pro"



## **Reuse and Rebuild**

We are making effort to reuse the parts and to supply reused parts in collaborating with our affiliate companies in Hino group with the objective of effective utilization of the resources.

The vital component parts of the vehicle, engine and transmission, are disassembled, cleaned, and replaced with parts if necessary, inspected on the quality equally strict to new parts level, and then used as the rebuilt parts.

The exterior parts such as used bumpers and lamps are cleaned, inspected on the quality and reused as the used parts.

We will extend the scope of reusing and rebuilding the used parts and promoting the networking of used parts sales.

## **Reducing Substances with Environmental Impact**

We announced the reduction target set for the substances that are possible to give an environmental impact at the disposal of the vehicles and are making effort to achieve this target.

## **Reducing Lead Usage**

Our voluntary target of reducing the lead usage (excluding the batteries) for new model is 1/2 below the level of 1996 and we implemented this target focusing on the medium-duty truck in 2001. New launched "Ranger-Pro" successfully achieved the reduction 51% below 1996 level by replacing with aluminum the copper used for radiators and heater cores. We are working on further reduction to achieve 1/3 of 1996 level by 2005 by promoting the technical development with alloy battery terminals in the core.



## Reducing Refrigerant HFC134a for Air Conditioner

The refrigerant HFC134a is linked to global warming. We are promoting to reduce the consumption of this refrigerant for air conditioner.

New "Ranger-Pro" reduced the volume of the refrigerant per vehicle from 800g to 500g. This completed the refrigerant-saving program on just about every model including large-size bus equipped with large capacity air conditioner.

For the other substances with environmental impact, we have started to work to check the current consumption, to select the substances to be stopped its usage or to be reduced the consumption. We will promote the systematical reduction of these substances.

## LCA [Life Cycle Assessment for Environment]

Hino Motors has been promoting the environmental protection activities in whole "Life Cycle of the Vehicle" including all stages of material, procurement, production, transport, operation, disposal, and recycling. To enhance these activities more effectively, we think it important to understand quantitatively at the development stage the entire environmental impact generated at every step of the product life cycle.

LCA is still developing its practice and data but can be expected as design supportive tool. We are participating in the working group for truck LCA organized by Japan Automobile Manufacturers Association, Inc. to carry out further research.

## **Hino Products**

Here are the specifications (representative models) and features of Hino's main products.

#### Light-Duty Truck "Dutro"



Vehicle model	KK-XZU306				
Engine model	S05D				
Cylinder configuration	L4				
Valve mechanism, Injection system	4-valve				
Displacement	4.899 L				
Maximum output (net)	103 kW (140 PS)/3,000 rpm				
Maximum torque (net)	353 N·m (36 kg·m)/1,600 rpm				
Meets the 1998 exhaust gas emissions regulation. Meets the certified model regulation (NOx).					

Meets the 2001 noise regulation.



Light-duty truck model minor-changed in interior and exterior in June  $2002\,$ 

Advanced engine equipped with electro-controlled fuel-injection pump and EGR (Exhaust Gas Recirculation) system has achieved a higher-level balance of high performance, high efficiency, and environmental protection performance.

Models equipped with PM trap meet the requirements of the seven Tokyo area municipalities' "Low-Emission Vehicle Designation System" "LEV-6 Designation System".

In the line-up, LPG, CNG, and gasoline engine models are also available.

The material mixed with natural material Kenaf is used for the gate panels for effective utilization of the resources.

Refrigerant-saving air-conditioner using HFC134a



Vehicle model	KK-FC5J					
Engine model	J 07C-TI					
Cylinder configuration	L5 (TI)					
Valve mechanism, Injection system	4-valve, Common-rail system					
Displacement	6.634 L					
Maximum output (net)	165 kW (225 PS)/2,700 rpm					
Maximum torque (net)	588 N·m (60 kg·m)/1,600 rpm					
Meets the 1998 1999 exhaust gas emissions regulations						

Meets the certified model regulation (NOx).

Meets the 2001 noise regulation.



Medium-duty truck full-model-changed in December 2001

The Japan's first 5-cylinder turbo intercooler engine equipped with the state-of-the-art technologies including common-rail, EGR, etc. has concurrently developed the output performance equivalent to the conventional 6-cylinder engine and achieved the drastic fuel efficiency and the reduction of exhaust gas emissions.

The material mixed with natural material Kenaf is used for the interior trimming.

90% or above recoverability rate has achieved with chassis-withcab condition. The lead usage has been reduced down to 1/2 or below of 1996 levels by adopting aluminum radiator and other effective measures.

Air-conditioner refrigerant HFC134a has reduced in volume per vehicle from 800g to 500g.

### Medium-Duty Truck "Ranger-Pro"



## Heavy-Duty Truck "Super Dolphin Profia Teravie"





Vehicle model	KL-FR1K
Engine model	K13C (KT- )
Cylinder configuration	L6 (TI)
Valve mechanism, Injection system	4-valve, Common-rail system
Displacement	12.882 L
Maximum output (net)	294 kW (400 PS)/2,000 rpm
Maximum torque (net)	1,667 N·m (170 kg·m)/1,100 rpm

Meets the 1999 exhaust gas emissions regulation. Meets the certified model regulation (NOx).



New mechanism transmission "Pro Shift" (7M-semiautomatic transmission) has realized improved easy-driving and fuel efficiency.

The lead usage has been reduced down to  $1/2\ {\rm or}$  below of 1996 levels by adopting aluminum radiator and other effective measures.

### 🔵 Bus "Liesse"



Vehicle model	KK-RX4J					
Engine model	J 05C-TI					
Cylinder configuration	L4 (TI)					
Valve mechanism, Injection system	4-valve, Common-rail system					
Displacement	5.307 L					
Maximum output (net)	129 kW (175 PS)/2,700 rpm					
Maximum torque (net)	490 N·m (50 kg·m)/1,600 rpm					
Meets the 1998 exhaust gas emissions regulation. Meets the certified model regulation (NOx).						

Meets the 2000 noise regulation.



Light-duty bus minor-changed in July 2001

The common-rail fuel-injection system, turbo intercooler, and its electronic control system have realized an optimal combustion for driving and reduced drastically the emission of NOx.

Idling stop system that cuts unneeded engine idling has realized energy saving, and reduction of exhaust gas emissions and noise.

The lead usage has been reduced down to  $1/2\ {\rm or}$  below of 1996 levels by adopting aluminum radiator and other effective measures.

The air-conditioner refrigerant HFC134a has reduced in volume per vehicle from 2,550g to 2,200g.

## **Activities in the Production Area**



Hiroshi Ginya Executive Vice-President, Member of the Board Chairman, Production Environment Committee

For decades, high economic growth has brought to us, "The Wealth." But it has also left us with massive scars, such as global warming, scarce refuse disposal facilities, bodily contamination and environment pollution caused by chemical substances. These problems are not exceptional to the automobile production industry but they are the most important issues facing it today and they demand immediate improvement.

In the "New Voluntary Plan" established in February 2001, Hino Motors targeted values of global warming protection, water conservation, waste reduction, and chemical substances reduction and is working to achieve these targets.

In FY2001, our activities were mainly focused on reducing environmental impact. More specifically, integrating the painting booths, eliminating the showers in antirust booths, recycling papers throughout the company and developing nickel removal equipment by electrolytic process allowed us to severely reduce the release of pollutants into the environment. In this report, we included a report on our environmental protection activities for soil and groundwater.



## **Preventing Global Warming**

Hino Motors is making the best effort to save the energy by setting up the target to reduce CO<sub>2</sub> emissions per sales 5% below FY2000 levels by the end of FY2005 (reducing CO<sub>2</sub> emissions 10% below FY1990 levels by the end of FY2010).

In FY 2001, we reduced CO<sub>2</sub> emissions per sales 13% below FY2000 levels by integrating the painting booths, installing the energy-saving trap, revising the setup temperature and supply-air pressure, integrating the production lines, etc.





## **Conserving Water Resources**

We are promoting water-saving activities by setting up the target to reduce the water consumption per vehicle 10% below FY2000 levels by the end of FY2005 with the objective of resource saving.

In FY2001, we reduced the water consumption 3% below FY2000 levels by eliminating the showers in anti-rust booths and promoting water-saving education campaign including displaying water-saving poster.



## **Reducing Waste**

Hino Motors has set up the targets to reduce waste and save resources in New Voluntary Plan and is working on the activities to achieve these targets of the voluntary plan.

### FY2001 Situation of Waste Disposal



#### 🔵 Waste for Direct Landfill

Zero waste for direct landfill<sup>\*</sup> was achieved in all plants in FY2000. We are working on further reduction of waste for direct landfill. In FY2001, we focused on recycling bobbin filters, separating thoroughly nonburnable waste plastic, and maintaining and strengthening the activities.

\* Zero waste for direct landfill:

Reducing less than 5% below FY1995 levels

### Combustible Waste

We are working on the setup target to reduce the waste to 1/3 (33%) of FY1990 levels by the end of FY2005. In FY2001, we reduced the waste 43% below FY1990 levels by establishing the control of waste discharge volume by each department and expanding paper recycling to whole company. We are working on further reduction to achieve the target of FY2005.



## **Controlling Chemical Substances**

Various chemical substances are used to manufacture the automobile. Hino Motors is conducting preliminary assessment and compilation of chemical substances in compliance with the PRTR (Pollutant Release and Transfer Register) Law.

### **Preliminary Assessment System for Chemical Substances**

Hino Motors established and enforced a system that assesses new chemical substances to be introduced at the first time in production as raw or auxiliary material. The assessment utilizes MSDS (Material Safety Data Sheet) and other tools to assess the possible impact of the material in question to the environment and safety.



#### Overview of Chemical Substances Preliminary Assessment System

\*Excluding raw materials such as metals and parts

#### **PRTR** [Pollutant Release and Transfer Register]

Hino Motors used 20 types of chemical substances subject to registration in FY2001. The total quantity handled of these substances was 1,800 tons (subject to compilation: consumption 1 ton or above). 30% of the total quantity handled was released into the atmosphere or water system.

To reduce the environmental impact caused by chemical substances, we set the voluntary target and are working on to accomplish it. The target is 30% reduction of the release (reference year: FY1998, target year: FY2005).

We reduced the release 53% below FY1998 levels by altering the washing thinner from toluene and xylene and stopping the operation of the painting shop for medium-duty trucks due to reconstruction in Hino Plant.

(Individual data of each plant is at the production site information.)





## **Reducing Substances with Environmental Concern**

### **VOC** [Volatile Organic Compounds]

Volatile Organic Compounds (VOC) are discharged from the body painting process. We established the voluntary target for reducing VOC and are promoting the activities to achieve this target.

In FY2001, we reduced the VOC emissions 8% below FY2000 levels by improving the recovery rate of thinners used in the painting process. We are working on further improvement of the recovery rate and the reduction of thinner use to achieve the target to reduce VOC emissions down to  $55 \text{ g/m}^2$  by the end of FY2002.



## PCB (Polychlorinated Biphenyl)

We properly control and store PCB that was used as insulation oil for transformers and condensers. At the end of FY2001, 191 units of equipments containing PCB were stored.

### HFC134a

HFC134a is refrigerant for vehicle air-conditioner and is a possible cause of global warming. We are improving the leakage prevention when refilling it. In FY2000, we completed the installation of gas recovery equipment at all production lines.



Gas Recovery Equipment

## Dioxin

A large-size incinerator is operating in Hamura Clean Center. The criterion measure of dioxin discharge will be enforced to 5 ng-TEQ/Nm<sup>3</sup> from December 2002. For this, we enhanced the control system and made following improvements in FY2001: to separate from waste the polyvinyl chloride sourcing dioxin and not to burn them in the incinerator, to optimize the waste input to the incinerator for assuring the perfect combustion and for preventing the generation of dioxin, to absorb generated dioxin into active carbon to prevent its discharge into the atmosphere.

## Nickel

As part of our activities reducing the substances with environmental impact, we set up the voluntary standard of nickel concentration being 0.1 mg/L or below applicable for the waste water and started its implementation. We developed and installed proprietary equipment that remove nickel by electrolysis. Now the above voluntary target is successfully observed.



Electrolysis System "Nickel Removal Equipment"

Mechanism to Remove Nickel by Electrolysis

+  $N^{2e}$   $2H^{1+}2e^{-} + H^{2} +$   $H_{2}O \rightarrow H^{1}+OH^{-}$   $N^{2e}$   $N^{2e}$   $M^{2e}$   $N^{2e}$  $N^{2e}+2OH^{-} \rightarrow Ni(OH)_{2} \downarrow$ 

Electrolysis system combines the nickel ion with hydroxyl generated by water electrolysis and separates the nickel as nickel hydroxide. To improve agglutinating performance, metal having good agglutinative property is used for anode. Then, the eluted anode hydroxide enwraps nickel hydroxide to be agglutinated and sedimented.

## Soil and Groundwater

Trichloroethylene, a chlorinated organic compound, is widely used in various industries as excellent cleaning agent. Hino Motors used to use this chemical as parts degreasing agent. However, in 1976, we had abolished totally the use of trichloroethylene before it was designated as hazardous substance by the government in 1989.

Afterward we started to investigate the extent of contamination in the soil and groundwater from 1994. The result revealed that the level of trichloroethylene in a place within the Head Office and Hino Plant exceeded the environmental standard, which attributed to Hino Motors responsibility. Thus, we started in 1997 to take active countermeasures for decontamination of this substance.

For the countermeasures, we gave the first priority to prevent the outflow of groundwater to the outside of the plant area and made barrier wells along the boundary line of the plant. The groundwater is pumped up and decontaminated by aeration. (The countermeasures necessary for preventing outflow were completed in 1998.)

For soil decontamination, the gas in the soil is sucked and removed by active carbon.

We voluntarily reported this problem to the government in September 1999. Since then we have been reporting periodically to the government the check result at the observation well to enable us to take further necessary measures in line with the guidance of the government.

We made an explanatory report on soil and groundwater latest condition to the representatives of local residents at "Community Council with Region Association" in August 2002.

We will continue our best effort to disclose information by taking into due account of the guidance of the government and the comments of the local residents.

#### Measurement Value of Trichloroethylene in FY2001

Environmental standard value: 0.03 [unit: mg/l]

Plant/Office	Groundwater level				
Head Office & Hino Plant	Less than 0.002 to 0.37				
Hamura Plant	Less than 0.002 to 0.047*				
Nitta Plant	Not detected				

• Since a number of measuring points exist in each plant, there is a range of measurement values.

 Date of measurement (Head Office & Hino Plant: December 2001, Hamura Plant: January 2002)

\* Due to the inflow coming outside of the plant





Community Council with Region Association

## **Logistics**

In the area of various physical distribution activities including completed vehicle distribution and knockdown parts distribution for overseas production, Hino

#### Reducing CO2 Emissions

We have devised and implemented a new completed vehicle transportation system using full-trailer to improve further transportation efficiency compared with the conventional way of transportation driving the vehicle itself or using carrier car.

This system couples a carrier for completed vehicle to

Motors is making efforts for environmental protection to reduce CO<sub>2</sub> emissions and packaging and wrapping materials by streamlining the transportation.

the general-use cargo truck and can drastically reduce CO<sub>2</sub> emissions compared with the conventional transportation system such as driving the vehicle itself. This system is now covering a limited transportation area including Osaka, Aichi, and Mie. We will expand this system for other areas.

#### Decontamination Measures for Groundwater (Image)

Loading to ship for leaving port

Arrival in port and unloading

Loading to ship for leaving port

Arrival in port and unloading

А,





For KD (knock-down) parts distribution, we used to deadhead empty containers from the harbor to Hino Plant, load KD case to the containers, and then transport the containers to the harbor. We then started to use other companies' import container when they returned to the harbor without cargo. Thus, we reduced the occurrence of deadheading empty containers and reduced CO2 emissions 5% below the level before this improvement.

Truck with loaded contained

Truck with empty container

Truck with empty container

Truck with loaded containe

Truck with loaded containe

Truck with loaded containe

Improvement of KD Parts Distribution

**Before improvement** 

A company (Uenohara city)

ČŽ.

A company (Uenohara city)

Truck with empty container



Coupling a Full-Trailer

## **Reducing Packaging and Wrapping Materials**

In physical distribution activities for production and spare parts such as the plant-to-plant distribution, procurement distribution, and spare parts distribution, we have worked on introducing returnable transportation case and box, expanding reusing them, cutting excess in packaging material.

For production parts exported to overseas, we started to use steel case for wooden case to reduce the usage of lumber material for protecting forestry resources.

These measures reduced successfully the packaging

and wrapping materials usage 25% below FY2000 levels.





## **Production Site Information**

## **Head Office and Hino Plant**

#### **Plant Manager**



**Bunji Hagiwara Hino Plant Director** Senior Executive Officer In charge of environmental management

#### **Environmental Policies of Head Office & Hino Plant**

- 1. Harmony with the region, symbiosis with the environment All departments collaborate to promote the environmental control by always bearing in mind the environmental impact related to the development, procurement, production engineering, production, and office work management in order to continue our automobile production activities for many years to come in the beautiful green Tama countryside.
- 2. Proactive measures are basics.
- We promote the thorough headstream measures for preventing the environmental pollution by maintaining and improving the environmental control system. Besides, we improve continuously to reduce the environmental impact.
- 3. Respect all applicable laws and regulations
- We respect and observe all applicable laws of the country, ordinances of the municipalities, and requirements related to the environment that we have promised to observe.
- 4. No waste to generate, no waste to use
  - We promote effective utilization of the resources and energy to goal "0" of discharge and waste to the environment.

#### 5. All members' consciousness of duty

We enhance all employees' environment-consciousness and all members participate in the environmental protection activities with enhanced consciousness of duty.

Address:

- 1-1, Hinodai 3-chome, Hino-shi, Tokyo Main products:
- Heavy-duty truck "Super Dolphin Profia," Medium-duty truck "Ranger-Pro"
- Number of employees:
- 4,607 (as of the end of March 2002)
- Site area: 430,000 m<sup>2</sup> Building area: 260,000 m<sup>2</sup>



FY1997 awarded by the prize (electric sector) of Director General of the Agency of Natural **Resources and Energy** March 24, 2001 acquired ISO14001 certifica-

tion

#### 🛛 Regional festivals 🔛





Hino Plant Cherry Blossom Festival

Water release (Water Pollution Prevention Law, Tokyo Ordinance)

Quality analysis of discharged water (Discharged into river / Tamagawa River via Yajigawa River)

Item		Regulation value	Maximum	Minimum	Average
Water discharged	[m³/day]	-	4,337	804	1,914
pН	[-]	5.8-8.6	7.5	6.8	7.0
BOD	[mg/L]	20	2.4	ND	1.3
COD	[mg/L]	-	12.0	3.7	6.2
SS	[mg/L]	40	4.0	1.0	1.8
Oil	[mg/L]	4.7	ND	ND	ND
Total phosphorous	[mg/L]	2	0.8	0.05	0.22
Total nitrogen	[mg/L]	20	11.3	2.3	7.3
Zinc	[mg/L]	4.75	0.14	0.09	0.12
Eluorine	[mg/[]	14.2	0.06	ND	0.03

ND: Below lower quantitative limit (not detected)

#### Air release (Air Pollution Prevention Law, Tokyo Ordinance)

Facilities	Measurement item		Regulation value	Maximum	Minimum	Average
Boiler	NOx	[ppm]	97	86	63	76
crude oil	Soot	[g/Nm <sup>3</sup> ]	0.3	0.065	0.035	0.047
Cogenerator	NOx	[ppm]	35	29	24	27
	Soot	[g/Nm <sup>3</sup> ]	0.05	0.004	0.003	0.003
Carburizing furnace No.1	NOx	[ppm]	180	160	110	135
city gas	Soot	[g/Nm <sup>3</sup> ]	0.2	0.021	0.019	0.02

#### Chemical substances (PRTR Law)

	[Unit: ton/year]								
Substances Name of substances		Quantity	Release ar	nount	Transfer amount		Des altres	Quantity	Consump
No.	designated as type 1	handled	Atmosphere	Waters	Wastes	Public sewerage	Recycling	removed	tion
40	Ethyl benzene	14.8	11.7	0	0.1	0	0	0.1	2.9
43	Ethylene glycol	253.3	0.1	0	0.4	0	0	0.1	252.7
63	Xylene	33.5	18.3	0	0.1	0	0	0.7	14.4
227	Toluene	33.0	10.5	0	0	0	1.4	0.1	21.0
299	Benzene	1.0	0	0	0	0	0	0	1.0
	Total	335.6	40.6	0	0.6	0	1.4	1.0	292.0
0			11					1 1 1	

Quantity handled over 5 t is subject to compilation. (For special chemical substances designated as Type 1, quantity handled over 500 kg is subject to compilation.)
 Quantity renoved: Amount removed by combustion treatment, decomposition, and etc.
 Consumption: Amount converted to other substances through chemical reactions or amount transferred outside the premises due to inclusion in products or accompaniment therewith.

#### **Environment-related complaints received by Hino Plant**

In FY2001, we received 11 complaints related to the environmental protection. • 1 complaint of bad smell from the casting plant • 2 complaints of noise and vibration from the stamping plant • 1 complaint of noise of disposal from the south area plant construction

7 complaints of other noise and vibration

Preventive measures were taken to the above complaints to eliminate similar problems in future.

#### Activities in the Production Area



## Hamura Plant

#### **Plant Manager**



Takahiko Yamamoto Hamura Plant Director Senior Executive Officer In charge of environmental management

#### **Environmental Policies of Hamura Plant**

- 1. Automobile production with less environmental impact
  - We respect and observe the environment-related laws, ordinances, and other agreed
  - We always bear in mind the environmental impact caused by the production and its related activities, improve and prevent continuously to reduce the environmental impact by managing the environmental control system, and thus maintain and improve the natural environment of beautiful Tama countryside.
- 2. Effective utilization of finite resources
- We bear in mind the finite nature of the resources and pursue the effectiveness of production and physical distribution.
- Basing on the concept that the reduction of waste at the source are the basics, we work on continuous and proactive plant building to goal "0" discharge and waste to the environment.
- 3. For human-friendly environment
- We make our best effort to maintain and improve the human-friendly environment for our Plant workers to work safely.We promote the environmental protection activities of the plant and community with conscious-
- ness of duty and cooperate actively for the regional environmental protection as corporate citizen.

Address:

- 1-1, Midorigaoka 3-chome, Hamura-shi, Tokyo Main products:
- Light-duty trucks "Dutro," "Dyna,"
- "Hilux," and "Hilux-Surf"

Number of employees:

- 2,631 (as of the end of March 2002)
- Building area: 300,000 m<sup>2</sup> Site area: 750.000 m<sup>4</sup>



FY1996 awarded by the prize (electric sector) of Director General of the Agency of Natural **Resources and Energy** March 10, 1999 acquired ISO14001 certification

#### Regional festivals





Hamura Plant Cherry Blossom Festival

#### Water release (Sewage Water Law)

Quality analysis of disch	arged water	sewer)			
Item		Regulation value	Maximum	Minimum	Average
Water discharged	[m³/day]	-	3,036	168	1,489
pН	[-]	5.7-8.7	7.7	6.6	7.0
BOD	[mg/L]	300	3.3	0.9	2.0
SS	[mg/L]	300	12.0	2.0	3.3
Oil	[mg/L]	5	ND	ND	ND
Total phosphorous	[mg/L]	20	3.1	0.1	0.4
Total nitrogen	[mg/L]	150	8.9	1.7	3.9
Zinc	[mg/L]	5	ND	ND	ND
Fluorine	[mg/L]	15	0.84	0.68	0.76

ND: Below lower quantitative limit (not detected)

#### Air release (Air Pollution Prevention Law, Tokyo Ordinance)

Facilities	Measur	ement item	Regulation value	Maximum	Minimum	Average		
Boiler	NOx	[ppm]	97	87	41	66		
	Soot	[g/Nm <sup>3</sup> ]	0.25	0.011	0.006	0.008		
Cogenerator	NOx	[ppm]	950	730	600	665		
	Soot	[g/Nm <sup>3</sup> ]	0.1	0.028	0.026	0.027		
Drying booth	NOx	[ppm]	180	66	3	15		
	Soot	[g/Nm <sup>3</sup> ]	0.1	0.01	ND	0.002		
Incinerator	NOx	[ppm]	250	120	66	93		
	Soot	[g/Nm <sup>3</sup> ]	0.5	0.002	-	0.002		
	Hydrogen chloride [mg/Nm <sup>3</sup> ]		750	150	41	96		
	Dioxin	[ng/Nm <sup>3</sup> ]	80	16	9.9	13		
VD: Below lower quantitative limit (not detected)								

#### Chamical substances (PPTP Law)

enen	neur substances	Luw)		[L	Jnit: ton/ye	ar (In cas	e of dioxin	is: g/year	
Substance	Name of substances	Quantity	Quantity Release amount		Transfe	r amount	Boovoling	Quantity	Consump-
No.	designated as type 1	handled	Atmosphere	Waters	Wastes	Public sewerage	Recycling	removed	tion
1	Water-soluble zinc compounds	10.9	0	0	3.2	0.1	0	0	7.6
40	Ethyl benzene	52.7	37.0	0	0.1	0	0	4.4	11.2
43	Eethylene glycol	598.1	0	0	0	0	0	0	598.1
44	Ethyleneglycol monoethylether	19.6	19.5	0	0	0	0	0.1	C
63	Xylene	257.2	167.5	0	0.1	0	0	29.1	60.5
101	2- Ethoxyethyl acetate	29.6	28.8	0	0	0	0	0.8	C
179	Dioxins	0	(1.2)	0	(19.2)	0	0	0	C
224	1,3,5-trimethylbenzene	17.0	9.1	0	0	0	5.2	2.7	C
227	Toluene	270.5	167.9	0	0.1	0	0	20.6	81.9
232	Nickel compounds	1.5	0	0	0.7	0	0	0	0.8
299	Benzene	3.7	0	0	0	0	0	0	3.7
311	Manganese and its compounds	16.8	0	0	1.0	0.1	0	0	15.7
	Total	1,277.6	429.8	0	5.2	0.2	5.2	57.7	779.5

Quantity handled over 500 kg is subject to compilation. (If or spectral chemical substances designated as type 1, quantity handled over 500 kg is subject to compilation.

#### Environment-related complaints received by Hamura Plant

#### In FY2001, we received 1 complaint related to the environmental protection.

• 1 complaint of rail noise from experimental postern gate Preventive measures were taken to the above complaint to eliminate similar problems in future.

## Nitta Plant

#### **Plant Manager**



Kanji Fujimoto Nitta Plant Director Senior Executive Officer In charge of environmental management

#### **Environmental Policies of Nitta Plant**

- **1. Harmony with the region, symbiosis with the environment** We promote the environmental control by always bearing in mind the environmental impact caused by automobile parts production in order to continue our automobile production
- activities for many years to come in the beautiful green Gunma countryside.
- 2. Proactive measures are basics.
- We promote the thorough headstream measures for preventing the environmental pollution by maintaining the environmental control system. Besides, we improve continuously to reduce the environmental impact.
- 3. Respect all applicable laws and regulations
- We respect and observe all requirements related to the environment: the applicable laws of the country, ordinances of the municipalities, and agreements with the region.
- **4.** No waste to generate, no waste to use We promote reduction of discharge and waste to the environment and effective utilization of the resources and energy.
  - 5. All members' consciousness of duty

We enhance all employees' environment-consciousness and all members participate in the environmental protection activities with consciousness of duty.

Address:

10-1, Aza Hayakawa, Oaza Hayakawa, Nitta-machi, Nitta-gun, Gunma Prefecture

Main products:

Engines for light-duty and medium-duty trucks, Transmission for heavy-duty and medium-duty trucks, Axles for medium-duty trucks

Number of employees:

933 (as of the end of March 2002)

Site area: 390,000 m<sup>2</sup> Building area: 140,000 m<sup>2</sup>



FY1999 awarded by the prize (electric sector) of Director General of the Economy, Trade and Industry

FY2001 awarded by the prize (heat sector) of Director General of the Economy, Trade and Industry

March 27, 2000 acquired ISO14001 certification

#### Regional festivals





Nitta Plant Autumn Festival

 Water release
 (Water Pollution Prevention Law, Prefectural ordinance, Pollution Prevention Agreement undertaking with Nitta-machi)

 Quality analysis of discharged water (Discharged into river / Hayakawa River)

	-		-		
Item		Regulation value	Maximum	Minimum	Average
Water discharged	[m³/day]	-	869	42	339
pН	[-]	6.0-8.0	7.5	7.1	7.4
BOD	[mg/L]	10	4.4	ND	2.2
COD	[mg/L]	15	12.0	2.0	5.6
SS	[mg/L]	15	4	ND	2.0
Oil	[mg/L]	3	1	ND	0.2
Total phosphorous	[mg/L]	8	0.11	0.09	0.1
Total nitrogen	[mg/L]	60	37.8	35.9	36.9
Zinc	[mg/L]	1	0.2	0.05	0.1
Fluorine	[mg/L]	1.5	0.1	ND	0.05

ND: Below lower quantitative limit (not detected)

### Air release (Air Pollution Prevention Law, Prefectural ordinance, Pollution Prevention Agreement undertaking with Nitta machi)

Prevention Agreement undertaking with Nitta-machi										
Facilities	Measurement item		easurement item Regulation value Maxim		Minimum	Average				
Boiler	NOx	[ppm]	180	83	55	71				
10t	Soot	[g/Nm <sup>3</sup> ]	0.1	0.03	0.003	0.012				
Heat treatment line	NOx	[ppm]	180	100	84	95				
No 1	Soot	[a/Nm <sup>3</sup> ]	0.1	0.034	ND	0.016				

ND: Below lower quantitative limit (not detected)

chemical substances		(I KIK Law) [Unit: ton/						ton/year]	
Substance	Name of substances designated as type 1	Quantity	Release amount		Transfer amount		Desulias	Quantity	Consump-
No.		handled	Atmosphere	Waters	Wastes	Public sewerage	Recycling	removed	tion
40	Ethyl benzene	13.2	12.4	0	0	0	0	0	0.8
43	Ethylene glycol	13.6	0	0	13.6	0	0	0	0
63	Xylene	22.0	17.7	0	0	0	0	0	4.3
68	Chromium and chromium () compounds	22.2	0	0	0.5	0	0	0	21.7
227	Toluene	25.3	18.9	0	0	0	0	0	6.4
232	Nickel compounds	0.7	0	0	0.1	0	0	0	0.6
311	Manganese and its compounds	7.0	0	0	0.3	0	0	0	6.7
Total		104.0	49.0	0	14.5	0	0	0	40.5

 Quantity handled over 5 t is subject to compilation. (For special chemical substances designated as Type 1, quantity handled over 500 kg is subject to compilation.)
 Quantity removed: Amount removed by combustion treatment, decomposition, and etc.

Consumption: Amount converted to other substances through chemical reactions or amount transferred outside the premises due to inclusion in products or accompaniment therewith.

Environment-related complaints received by Nitta Plant In FY2001, we received no complaints.

# **Social Contribution Activities**

## **Contributing to a More Prosperous Society**

Harmonious co-existence with the community environment is the first priority issue for business activities. Hino Motors makes the best effort to meet the requests from the society, devote every employee's attention to the region and society, and contribute to the creation of more affluent society with the consciousness of the duty as "better corporate citizen."

## Outline of the Activities

Our social action program spreads to education & academic research, international contribution & cooperation, social welfare, natural environment, and regional society. We invite local residents to the cherry blossom festival where various attractions are organized to cultivate mutual friendship. We also make efforts to obtain better understanding as "better corporate citizen" by participating in the industrial and environmental festival organized by the community, inviting the local residents to the plant, and undertaking clean-up activities around the plants.

#### Number of People Touring to Our Plants (FY2001)

Plant	Number of groups	Number of people		
Hino Plant	341	16,961		
Hamura Plant	120	8,757		
Nitta Plant	48	1,120		
Total	509	26,838		

### Volunteer Activity Support

Supports for volunteer groups including KIDS



Support for KIDS Disneyland Project

### Community Events



Hachioji Environmental Festival



Eco-Car World 2001



Cleaning Curve Mirrors



Tour to Ibaraki Test Course (opened to public)

## **Hino Motors Green Fund**

#### 1. Background of Establishment

Hino Motors celebrated the 50th anniversary of its foundation in May 1992. Hino Green Fund was established as a part of the commemoration events. This organization is promoting various businesses contributing to the natural environmental protection in line with Hino Motors' basic policy "Harmony with Social Environment".

#### 2. Date of Establishment

July 30, 1991

#### 3. Contents of Activities

The activities below have been organized with the motto "Think Globally, Act Locally."

- 1) Carrying out and supporting activities to plant trees and flowers
- 2) Supporting activities for natural environmental protection
- 3) Supporting studies and researches contributing to the natural environmental protection
- 4) Carrying out and supporting awareness-promotion activities contributing to the natural environmental protection

#### 4. Basic Assets

640 million yen

The foundation owns 8 ha of forest land (called: HGF forest) within Itaatari National Forest, Hachioji-shi, contracted by the profit-sharing forestry system.

#### 5. Main Events (FY2001)

- May: Charcoal burning experience (at Takao-san recreational woods)
- June: General meeting
- August :#1 committee meeting for selecting the candidates to be fostered
- September: #2 committee meeting for selecting the candidates to be fostered
- October : Meeting for getting close to the forest (at HGF forest)
- November : Aid fund presentation ceremony and activities report meeting
- January 2002: Environment lecture meeting ("Charcoal and its effects")

#### 6. Progress of Aids Fund





Charcoal Burning Experience (at Takao-san Recreational Woods)



Capturing Fish of Foreign Origin to Retrieve the Ecological System



Meeting for Getting Close to the Forest (at HGF Forest)



Announcement of Candidates to be Fostered



Environment Lecture Meeting ("Charcoal and Its Effects")

<u> </u>	2-380-3934
Environmental Affairs Di	vision, Hino Motors, Ltd.
Please complete the questionnair Your comments will help us make further improver	e below and return it to us by fax. nent and prepare our next Environmental Reports.
Q1. How would you evaluate this report? (Please circle only one.)	Q5. After reading this report, how do you feel about Hino Motors's environment-related activities?
1. Excellent     2. Good     3. Average       4. Unsatisfactory     5. Poor	1. Excellent2. Good3. Unsatisfactory4. Poor
Why did you choose the answer above? Please give specific reasons (e.g., topics covered or simplicity).	Why did you choose the answer above? Please give specific reasons.
Q2. What impressed you the most about this report? What information did you find most interesting?	Q6. What would you expect Hino Motors to do concerning the environment? Please give specific reasons.
Q3. Is there any part of this report that should be supplemented with more information or improved in any other way?	Q7. Why did you receive this report and how did you become aware of it? (Circle as many as relevant.)
<ul> <li>Q4. To all who have read last year's Environmental Report. What is your impression of this year's report as compared with last year's?</li> <li>1. Much fuller in content 2. A little fuller in content 3. No change 4. Last year's report was better</li> </ul>	<ol> <li>Live in a community with Hino Motors's plant or office.</li> <li>Have transactions with Hino Motors</li> <li>Member of government or administrative office</li> <li>Member of NPO such as environment group</li> <li>Member of the press</li> <li>Hino Motors employee or family member</li> <li>None of the above</li> </ol>
Why did you choose the answer above? Please give specific reasons.	(Be specific: ) How did you become aware of the report?
	1. Newspaper       2. Magazine         3. Hino Motors web site       4. Hino Motors dealer         5. Heard from a friend or acquaintance         6. None of the above

## ◆Thank you for your cooperation. Please tell us about yourself, if you do not mind.

Name		Sex 1. M	lale 2. Female	Age			
Address	Iress						
Occupation/ Workplace	Dep	partment and title					

### **Correction of the Environmental Report 2001**

- On page 4 of the Environmental Report 2001, the establishment of "Hino Global Environment Charter" was mistakenly printed in April 1993, the correct date is March 1993.
- On page 24, the graph of "Water-Saving Activities" reported the water consumption in FY2000 being 1,939 (thousand m<sup>3</sup>). The recompilation of the data proves the correct water consumption to be 1,896 (thousand m<sup>3</sup>). In this report, the correct compilation results are used.

## About This Environmental Report

This report is made in conformity to "Environmental Report Guideline (FY2000 version)" of the Ministry of the Environment.

The period covered in the date is from April 2001 to March 2002, and major developments are described as of September 2002.

This report is also published in PDF format on Hino Motors Web site.

You can access also to our environment-related activities below from our Web site.

Environmental information by model Model list complying with the Green Purchasing Law Line-up of low-emission vehicles Hino Motors Announcement on the Environment

http://www.hino.co.jp/

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