ESG Initiatives

Environment

Environmental Management

HINO GLOBAL Environment Charter

In April 1993, Hino Motors formulated the Hino Global Environment Charter, laying out its fundamental approach to environmental conservation. Every five years, the company creates a concrete action plan called an Environment Initiative Plan based on the charter, and advances activities in accordance with this plan.

Revised February 1, 2001

Ⅰ. Basic Policies

1. We will promote comprehensive and ongoing environmental protection.

As a leading manufacturer of diesel vehicles, we will endeavor to offer superior products to customers in all countries, and continue to contribute to the achievement of greater prosperity through our products. In this, we are fully aware of the environmental impact of our products, and pledge ourselves to an earnest commitment to sustainable human and global development through ongoing efforts, whilst also paying careful attention to preventing pollution wherever we engage in our corporate activities.

2. We will take concrete and definite steps to protect the global environment.

Through the establishment and operation of our Environmental Management System we will maintain continuous efforts to define, assess and review environmental goals and targets while strictly adhering to all legal and other requirements placed upon us.

Ⅱ. Action Guidelines

1. We will minimize the environmental impact of our vehicles throughout their life cycles, and of all our corporate activities in general.

We are determined to offer the public products having top-level environmental performance, and to engage in continuous technical development designed to minimize the environmental impact of our products and their distribution.

We will also engage in the establishment and operation of an Environmental Management System embracing all stages in the life cycle of our vehicles.

2. We will develop closer partnerships with our affiliated companies.

The cooperation of a great many companies is critical for the effective pursuit of our business activities. We will work closely with vehicle manufacturing partners both in Japan and abroad, and will strive to extend the mutual range of our environmental protection efforts.

3. We will make greater efforts in the areas of information disclosure, education and awareness-promoting activities.

We will engage in activities designed to disseminate to as many people as possible a correct and proper understanding of what we are trying to achieve. At the same time, we will spare no effort to hone our own environmental sensitivity.

4. Our contribution is not limited to the offering of superior products.

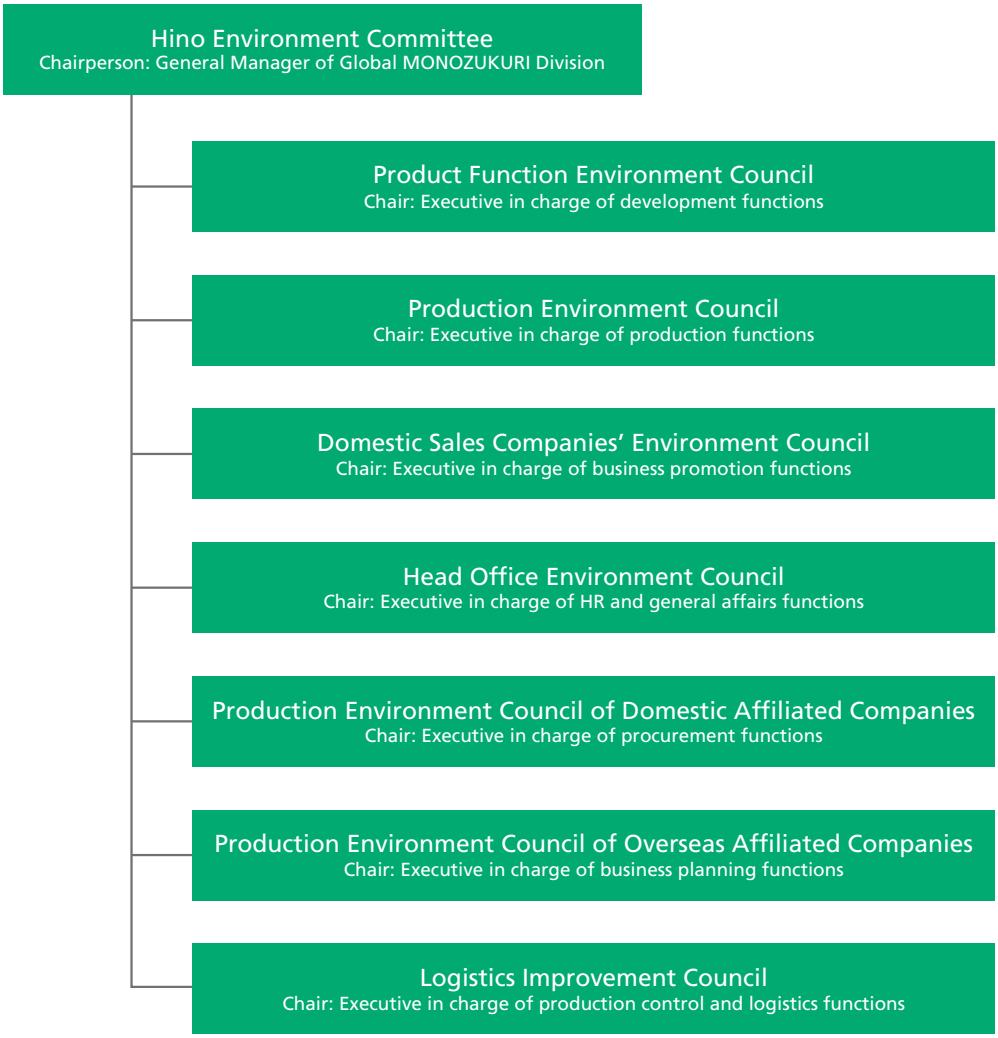
As corporate citizens, and as a corporate entity existing within a local community, we will take an active part in a broad range of community and social activities.

Environmental Conservation Promotion Structure

In March 1993, Hino Motors established the Hino Environment Committee, an overarching Company-wide organization chaired by the Hino Motors' president. At the same time, Hino Motors formulated the Hino Global Environment Charter, which underpins various facets of Hino Motors environmental conservation activities. Currently, the General Manager of the Global MONOZUKURI Division is serving as chairperson in order to further strengthen oversight and execution.

Developing and expanding environmental management systems on a separate functional basis are the features that most clearly define Hino Motors' environmental conservation activities. In this context, Hino Motors has established seven organizations subordinate to the Hino Environment Committee encompassing each of the Domestic Sales Companies, Headquarters, Production, Product Function, Logistic, and domestic dealer functions, Domestic Production companies, Overseas affiliated companies. Chaired by an appointed executive, these organizations promote specific environmental conservation initiatives and are working to further reinforce systems for carrying out long-term initiatives.

● Environmental Conservation Promotion Structure



Environmental Management Systems

Hino Motors has developed environmental management systems (EMS) for all operational functions in Japan, and is effectively managing them in a manner that links each division's business operations to environmental conservation. At EMS-certified companies, these systems are periodically subjected to stringent environmental audits to ensure their effectiveness.

Hino Motors has acquired ISO 14001 certification for the Hino Group as whole. Hino Motors will continue to promote environmental initiatives with an even stronger policy of reinforcing links between its core business operations and environmental management systems.

● Acquisition of ISO 14001 Certification

Organization/Entity	Date of acquisition
Headquarters & Hino Plant	March 24, 2001
Hamura Plant	March 10, 1999
Nitta Plant	March 27, 2000
Oume Parts Center	January 11, 2002
Hidaka Delivery Center	January 11, 2002
Azuma Plant of Fukushima Steel Work Co., Ltd.	November 28, 2003
Sagami Plant of Fukushima Steel Work Co., Ltd.	September 15, 2005
Riken Forge Co., Ltd.	March 22, 2002
Sohshin Co., Ltd.	March 14, 2003
Takebe Tekkosho Co., Ltd.	April 17, 2001
Trantechs, Ltd.	March 8, 2002
Meiyu Kiko Co., Ltd.	July 5, 2002
Hino Motors Manufacturing (Thailand) Ltd.	March 1, 2001
Hinopak Motors, Ltd.	June 17, 2001
PT. Hino Motors Manufacturing Indonesia	April 4, 2005
Shanghai Hino Engine Co., Ltd.	Decmeber 28, 2008
Hino Motors Vietnam, Ltd.	February 28, 2011
Hino Motors Manufacturing Mexico, S.A. DE C.V.	May 3, 2011
Hino Motors Canada, Ltd.	December 1, 2011
Arkansas Plant of Hino Motors Manufacturing U.S.A. Inc.	April 13, 2011
West Virginia Plant of Hino Motors Manufacturing U.S.A. Inc.	March 15, 2012
Hino Motors Philippines Corporation	August 8, 2017

Environmental Audits

Hino Motors conducts internal environmental audits as well as external audits by registered inspection organizations. Audits are undertaken within the overall context of environmental management system implementation and based on ISO 14001 standards. Hino Motors is responding appropriately to the results of each external audit conducted in fiscal 2017, as shown below.

● Fiscal 2017 Audit Results

Office/Entity	Type of Audit	Imperative Non-Conformity	Non-Conformity	Observations
Headquarters & Hino Plant	Surveillance	0	0	11
Hamura Plant	Surveillance	0	0	10
Nitta Plant	Re-Certification	0	0	11
Oume Parts Center/ Hidaka Delivery Center	Surveillance	0	0	7

Environmental Risk Management

In various facets of its operational activities, the Hino Motors Group is addressing environmental risk management through awareness of the environment-related regulatory compliance across each of the countries and regions in which the Hino Motors Group operates, and incorporation of environmental risk countermeasures into environmental management system targets. In this manner, Hino Motors is continuously enhancing its environmental risk management capabilities while diversifying and promoting the quality of its initiatives. All of Hino Motors' activities involve certain environmental risks, from commercial vehicle design and development to procurement, production, distribution, and sales.

With the leadership of the Hino Environment Committee, Hino Motors has analyzed and assessed risks and opportunities related to environmental issues at seven different meetings, consulted with the executives in charge who chair each Environment Council, decided long- and short-term countermeasures, and implemented them in the relevant divisions. Hino Motors gives the highest priority to risks and opportunities related to laws and regulations. In the case of product marketability and productivity improvements, the Company decides based on cost-effectiveness as well as from an environmental perspective. The results of these efforts are reported to the relevant Environment Council and then reported to the Hino Environment Committee, the top deliberative body, as necessary.

In fiscal 2017, there was one oil leakage incident in the Hino Group. This was caused by a malfunction of the oil skimmer in a wastewater treatment facility. After conducting a check, Hino Motors immediately took steps to prevent any recurrence and reported it to the Hino Environment Committee.

◆ Moving Forward with Initiatives to Lower Environmental Risks

The Hino Motors Group identifies risks and implements countermeasures using an environmental risk assessment manual used throughout the Group.

To further reinforce efforts to prevent leakage accidents, in fiscal 2015, Hino Motors began identifying environmental risks in work that involve the handling of liquid substances.

Efforts taken by Hino Motors Group companies include installing a blocking dam to prevent irregular wastewater discharge and arranging storage space for drum cans to reduce environmental risk.

As part of all these efforts, the Company is taking measures to further reduce environmental risk identified under various scenarios .

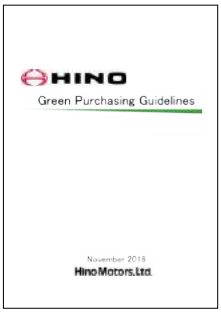
Blockade dam for preventing abnormal drainage

Drum storage area created as a risk countermeasure

Green Purchasing Guidelines

To further promote environmental initiatives associated with its business activities, Hino Motors published guidelines concerning environmental initiatives for business partners and expanded its partners around the world after holding separate information sessions with them. It created these guidelines for its business partners around the world after holding separate information sessions with them. Since providing the guidelines, Hino Motors has been regularly monitoring the environmental performance of its business partners and their compliance with environment-related laws and regulations.

Looking ahead, Hino Motors intends to actively promote activities in collaboration with its business partners while stepping up initiatives that take full account of the supply chain.



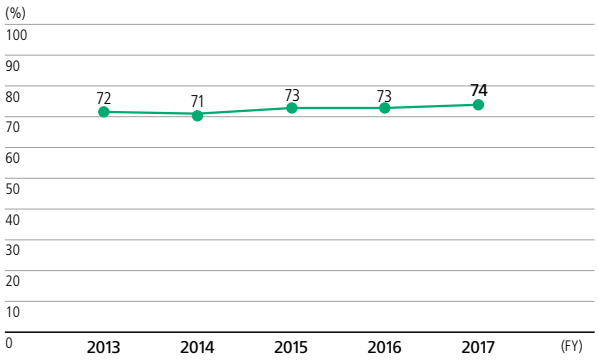
Green Purchasing Guidelines

HINO's Green Purchasing Guidelines (all pages)

Green Purchasing

In September 2001, Hino Motors formulated a set of Green Purchasing Guidelines as well as a Green Purchasing Promotion Plan, taking into consideration the Green Purchasing Items specified by the Ministry of the Environment under the Green Purchasing Law of Japan. In this manner, and as a part of its ongoing initiatives, Hino Motors is promoting the purchase of environmentally friendly office supplies and equipment.

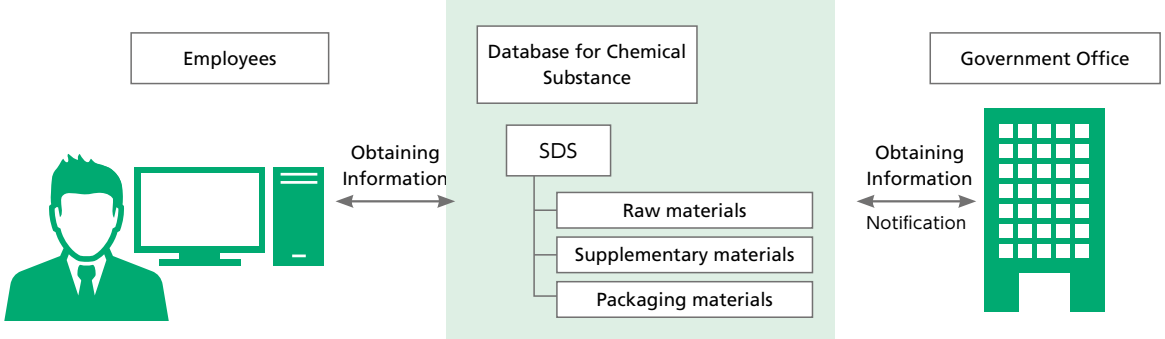
● Green Purchasing Rate of Office Supplies



Chemical Substance Management

Hino Motors employs Safety Data Sheets (SDS) to collect data and maintains a database for all paint and related materials used in-house. Information is accessible by employees via PCs, enabling them to identify chemical substances contained in the materials and undertake environmental and safety measures when required.

With the growing adoption of regulations for environmentally hazardous substances around the world, Hino Motors is enhancing the chemical substance management of raw materials used in its products, supplementary materials in manufacturing equipment, and packaging materials. Through these efforts, the Company is reducing the amount of environmentally hazardous substances used in its operations.



Environmental Accounting

Hino Motors tabulates the costs and results of environmental conservation activities based on the Environmental Accounting Guidelines of Japan's Ministry of the Environment. This enables the Company to contribute to environmental conservation through effective environmental investment and ongoing reductions in its environmental impact.

In fiscal 2017, the total of environmental conservation costs decreased by 99% year on year to 33.9 billion, equivalent to 1.8% of sales.

The economic effect of environmental conservation on the Group's financial performance was 1.7 billion, up 16% compared to the previous fiscal year due to active capital investment.

●Environmental Conservation Costs

Unit: millions of yen

Environmental Conservation Costs	FY2016		FY2017		
Item	Investments	Costs	Investments	Costs	Description of major initiatives
(1) Costs in operational areas	233	662	123	763	
① Pollution prevention costs	71	375	109	279	Expenses for environmental risk countermeasures, drainage water treatment, and other activities
② Global environmental conservation costs	118	13	5	122	Installation of energy-saving equipment
③ Resource recycling costs	44	274	9	362	3R promotional activities, waste disposal, and other activities
(2) Upstream and downstream costs	0	74	0	67	Additional costs for reducing environmental load
(3) Management activity costs	0	401	0	401	Ongoing implementation of environmental management systems, and information disclosure
(4) Research & development costs	0	32,925	0	32,528	R&D expenses for reducing environmental load
(5) Social activity costs	0	3	0	5	Costs for environmental improvements, including off-site environmental conservation, tree planting, and beautification projects.
(6) Environmental remediation costs	0	0	0	0	
Total	233	34,064	123	33,762	

*For items such as capital expenditures that are difficult to distinguish whether they deal with the environment or have another purpose, only those items that can be clearly understood as dealing with the environment are recorded.

●Impact of Environmental Conservation (1) Economic results

Unit: millions of yen

	Details of results	FY2016	FY2017
Profits	Operational income from recycling	1,398	1,635
	Others	0	0
Reduced costs	Reduction in energy costs due to energy conservation	41	49
	Reduction in waste treatment costs due to resource conservation and recycling	13	3
	Others	0	0
Total		1,452	1,687

Note: The results of environmental conservation are calculated only for those items that can be definitely identified as having an effect over a single year.

●Impact of Environmental Conservation (2) Quantitative results

	FY2016	FY2017
CO_2 reduction (tons-CO_2)	1,041	739
Waste reduction (tons)	448	204

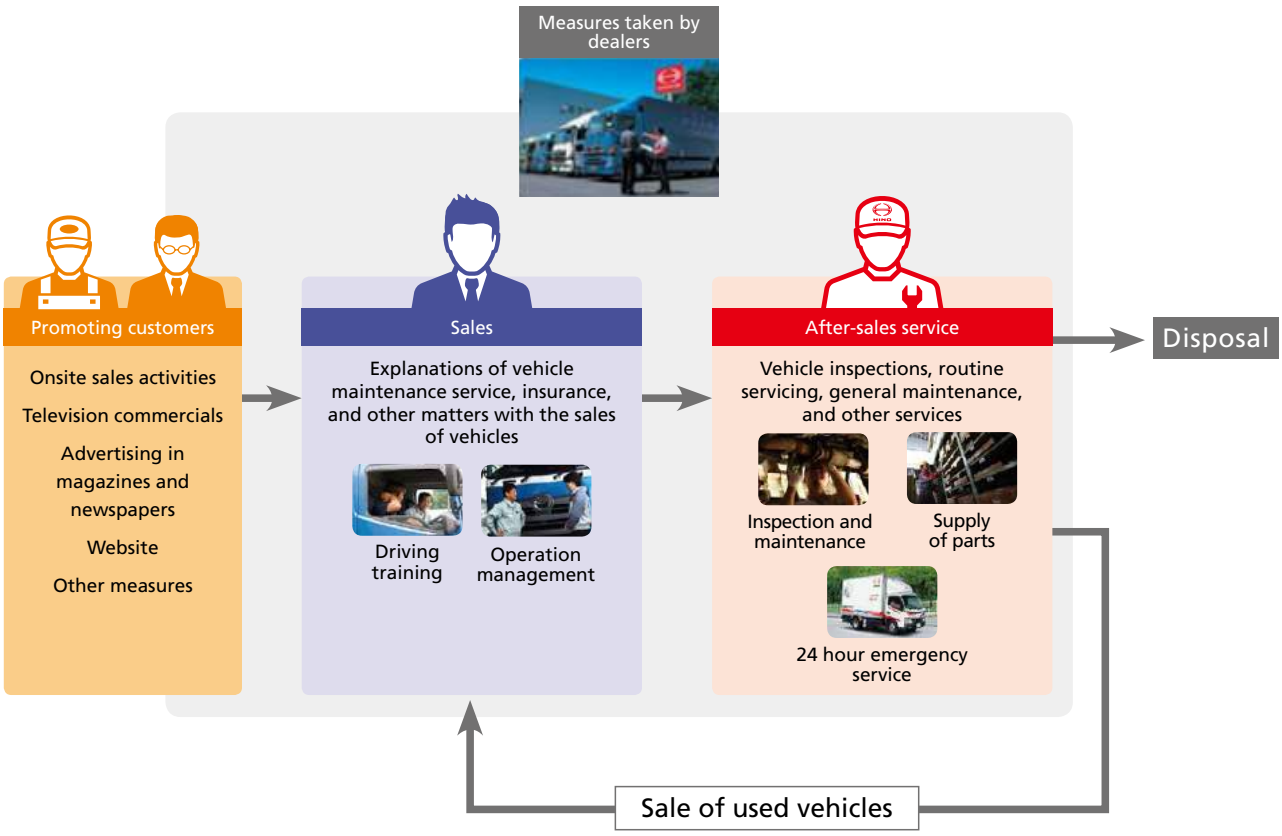
Note: The results of environmental conservation are calculated only for those items that can be definitely identified as having an effect over a single year.

Total Support Services and Products

Trucks and buses are subject to various regulations concerning fuel consumption and exhaust emissions, including emissions of nitrogen oxide (NOx) and particulate matter (PM), and these regulations have been growing stricter with each passing year. Meeting these standards is an important obligation as a manufacturer of trucks and buses. In recent years, consumers have come to place importance on the environmental performance of commercial trucks and buses in addition to their basic performance such as horsepower, load capacity, and drivability. Companies are developing new products by applying their expertise and latest technologies to meet these expectations.

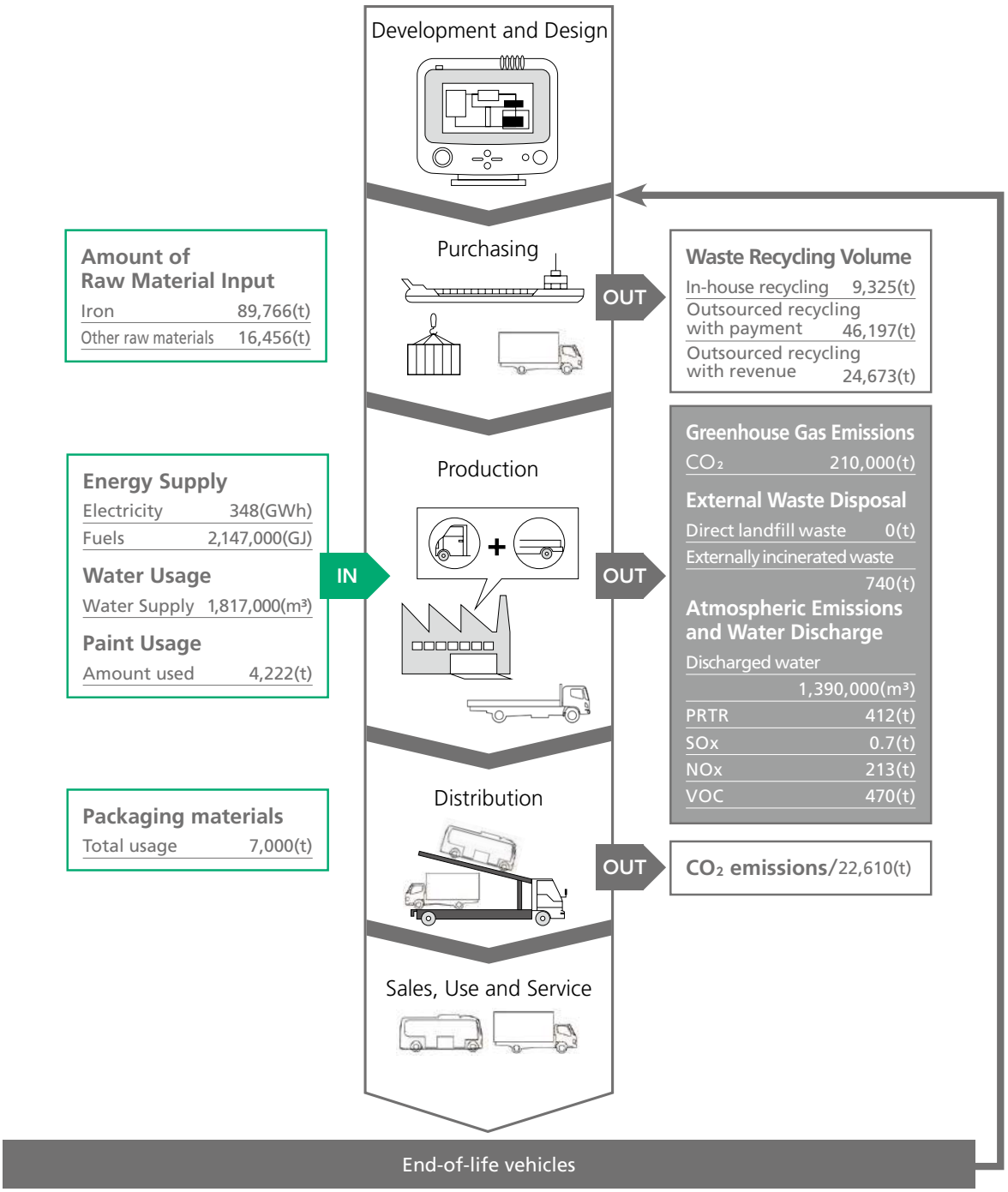
While promoting product development aiming for the industry's best environmental performance, Hino Motors is also focusing specifically on offering various benefits to customers throughout the entire product lifecycle, including servicing. Accordingly, Hino Motors is striving to maintain the environmental performance of its vehicles by enhancing its "total support" so that customers can use the environmentally friendly trucks and buses it has developed in ways that are friendly to the environment, right through to the time of final disposal. Going forward, Hino Motors will strive to enable its support system to respond to the needs and requests of every single customer, while always working to supply top-quality trucks and buses.

● Total Support Process



Material Balance

At each and every stage of the product lifecycle, from development through design to use and disposal, Hino Motors seeks to identify the impact of its business activities on the environment. Hino Motors is making every effort to reduce environmental load while working to clarify the processes where it is particularly evident.



Note: The information provided represents aggregate data for the Company's Hino, Hamura, koga, and Nitta plants.

Hino Environmental Challenge 2050

To make the world a better place to live and connect the next generation to the future

Basic Stance

In October 2017, Hino Motors established the Hino Environmental Challenge 2050, a set of new long-term goals to help create a sustainable society for the future.

Hino's corporate mission is "to make the world a better place to live by helping people and goods get to where they need to go safely, economically and with environmental responsibility while focusing on sustainable development." Fulfilling this mission, the Company has supported the businesses of customers and contributed to society by providing trucks and buses suited to the needs of customers around the world.

The Hino Environmental Challenge 2050 presents six challenges to be taken up by the Hino Group as a manufacturer of trucks and buses to address various global environmental issues such as climate change, water shortages, resource depletion, and destruction of nature.

Hino Environmental Challenge 2050

The trucks and buses that Hino Motors provides impact the environment in every aspect of their product life cycle, from making parts and materials used in vehicles to vehicle manufacture, use, and disposal. The overall objectives shared across the Hino Group are to reduce environmental impact, make the world a better place to live, and connect the next generation to the future.

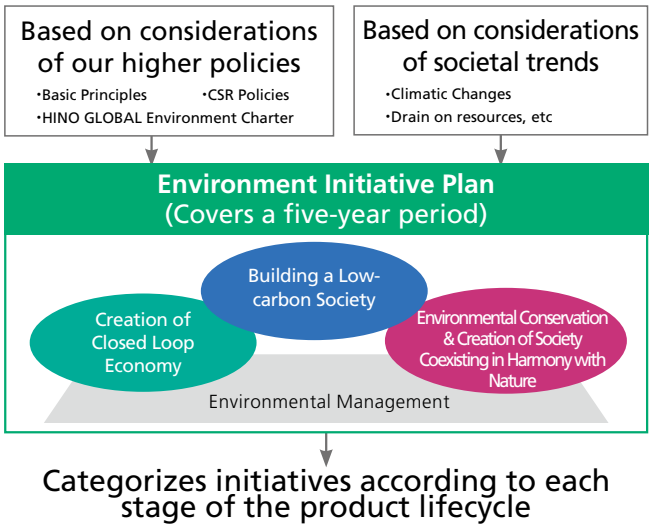
Although the established goals are very high, the Hino Group will work as one to revolutionize logistics through technical innovation of products, manufacturing innovation at production sites, and IoT technologies. As an environmental frontrunner, the Group will take on the challenge of becoming an environmentally advanced company.

Environment Initiative Plan - Action Plan to Realize the Six Challenges

The Environment Initiative Plan is an action plan based on the Hino Credo, the Hino Global Environment Charter, and other top policies and social trends. In 1993, Hino Motors formulated its first Environment Initiative Plan, and it has implemented and reviewed its targets every five years since then. The sixth 2020 Environment Initiative Plan was planned for implementation from fiscal 2016 to 2020. However, the Company will contribute to the sustainable development of society by linking the knowledge and new challenges thereby gained to the six challenges of the Hino Environment Challenge 2050.

●Positioning of the Environment Initiative Plan

The 2020 Environmental Initiative Plan includes Hino Motors' goals of building a low-carbon society, creating a closed loop economy, environmental conservation and creation of a society coexisting in harmony with nature, and environmental management. Hino Motors seeks harmony with the environment throughout the product lifecycle in line with the action plan.



●Key initiatives of the 2020 Environmental Initiative Plan that contribute to the Hino Environmental Challenge 2050

Hino Environmental Challenge 2050	2020 Environment Initiative Plan
CHALLENGE! 1 New Vehicle Zero CO_2 Emissions Challenge	●Improve CO_2 emissions and fuel consumption performance of vehicles ●Promote the development of vehicles that run on clean energy
CHALLENGE! 2 Life Cycle Zero CO_2 Emissions Challenge	●Make transportation more efficient and reduce CO_2 emissions in logistics ●Work to reduce CO_2 emissions in sales activities
CHALLENGE! 3 Factory Zero CO_2 Emissions Challenge	●Work to reduce CO_2 emissions in production activities
CHALLENGE! 4 Challenge of Minimizing and Optimizing Water Usage	●Work to reduce water usage in production activities
CHALLENGE! 5 Challenge of Achieving Zero Waste	●Develop technologies that enable elimination of the use of scarce resources ●Develop new vehicles with a higher ratio of recyclable components ●Reduce waste from production and logistics, and use resources effectively ●Work to reduce usage of packaging materials and use resources effectively
CHALLENGE! 6 Challenge of Minimizing the Impact on Biodiversity	●Reduce gas emissions to help improve urban air quality in each country and region ●Reduce environmentally hazardous substances (VOC) in production activities ●Implement biodiversity preservation activities locally at factories in every region where the Group operates

2020 Environment Initiative Plan **Building Low-carbon Society**

New Vehicle Zero CO_2 Emissions Challenge

Life Cycle Zero CO_2 Emissions Challenge

Factory Zero CO_2 Emissions Challenge

Field	Item	Specific Action Items/Targets, etc.	Fiscal 2017 Achievements and Challenges for the future
Product development	**Improve CO_2 emissions and fuel consumption performance of vehicles**	•Develop technologies to meet world's top-class fuel efficiency standards Japan ・Develop technologies to improve fuel efficiency to meet next round of regulations ・Improve the performance of hybrid vehicles United States ・Develop technologies for enabling compliance with greenhouse gas emission regulations in 2020 Europe ・Develop technologies to improve fuel efficiency to meet next round of regulations	•Released new models of Hino Profia heavy duty trucks and Hino Ranger medium-duty trucks The Hino Profia has now achieved 10% greater fuel efficiency than fiscal 2015 fuel efficiency standards, and the number of Hino Ranger trucks with 5% greater fuel efficiency was increased. •Released an improved model of Hino Dutro light-duty trucks Added to the lineup are hybrid trucks that have now achieved 15% greater fuel efficiency than fiscal 2015 fuel efficiency standards, while diesel trucks now have 5% greater fuel efficiency. •Released and improved model of Hino S'elega heavy-duty tourist buses Added to the lineup are a long-bodied bus (overall length of 12m) that achieves 15% greater fuel efficiency with an A09C engine, a bus that achieves 15% greater fuel efficiency with an E13C engine, and a bus that fulfills fuel efficiency standards with an A05C engine.
	Promote the development of vehicles that run on clean energy	•Conduct R&D on electric vehicles Plug-in hybrid vehicles ・Conduct R&D intended for making the technology feasible Fuel cell vehicles ・Develop fuel cell vehicles and sell a limited number Electric vehicles ・Conduct R&D intended for commercializing electric trucks and buses •Conduct research on technologies for enabling the use of alternative fuels ・Develop technologies that enable a switchover to biofuels and other alternative fuels	•Released heavy-duty electric refrigerated trucks that comply with fiscal 2016 gas emission regulations •Released heavy-duty hybrid route buses that comply with fiscal 2016 gas emission regulations •Released light-duty hybrid trucks with improved fuel efficiency •Jointly developed fuel cell (FC) buses with Toyota Motor Corporation; the Toyota FC Bus is used on bus routes operated by the Bureau of Transportation of the Tokyo Metropolitan Government
Production and logistics	**Initiatives for reducing CO_2 emissions in production activities**	•Carry out initiatives for reducing CO_2 emissions on both a total and per-vehicle basis by introduce low-CO_2 production technologies, and reduce CO_2 through daily improvements •Consider to exploit renewable energy and renewable energy (Targets in CO_2 Production Emissions Reduction for FY 2020) Overseas Operations ・26% reduction in emissions per unit compared to FY 2008 Consolidated Companies in Japan ・24% reduction in emissions per unit compared to FY 2008 Hino Motors Ltd. ・30% reduction in emissions per unit compared to FY 2008 ・Reduction in emissions: Fiscal 2020 output target x active mass •Control emissions of other greenhouse gases besides CO_2	•Steadily promoted the following goals at the CO_2 Reduction Working Group, which was launched to achieve 2020 goals. (Results) Global: ・Reduced emissions per unit by 32% compared to FY2008 Consolidated Companies in Japan: ・Reduced emissions per unit by 29% compared to FY2008 Hino Motors, Ltd: ・Reduced emissions per unit by 38% compared to FY2008 ・Emissions of fiscal 2017 were 210 thousand tons HINO Motors will create technologies and formulate plans to achieve additional long-term goals (30–50 years)
	Make transportation more efficient and reduce CO_2 emissions in logistics	•Promote initiatives to reduce CO_2 ・emissions in logistics by improving efficiency of transportation. Shorten distribution routes between factories and improve shipping efficiency by using tractor-trailers and increasing transport loading rates ・Use more fuel-efficient vehicles ・Improve efficiency of vehicle parts shipments (Targets in CO_2 Distribution Emissions Reductions for FY 2020) Consolidated Companies in Japan ・26% reduction in emissions per unit of transport volume compared to FY 2008 Overseas Operations ・Set targets and promote reduction measures according to the highest standards in each country	(Results) Consolidated Companies in Japan: ・Reduced emissions per unit of transport volume by 22% compared to FY2008 (Future Challenge) Further efforts to assess impact due to plant relocation and to promote emissions reduction activities. Overseas Operations: ・Promoting reduction activities in each country
Sales and after-sales service	**Initiatives for reducing CO_2 emissions in sales activities**	•Create and execute plan to reduce energy consumption per unit by at least 1% per year at Japanese sales offices •Assist customers in reducing CO_2 emissions	•Achieved reductions by installing low-energy-consumption lighting and placing restrictions on air conditioning usage Decreased total energy consumption per unit by 3.1% compared to fiscal 2015

2020 Environment Initiative Plan **Creation of Closed Loop Economy**

Challenge of Minimizing and Optimizing Water Usage

Challenge of Achieving Zero Waste

Field	Item	Specific Action Items/Targets, etc.	Fiscal 2017 Achievements and Challenges for the future
Product development	**Develop technologies that enable elimination of the use of scarce resources**	•Reduce the amount of precious metals used in exhaust-cutting catalytic converters	•Excavated precious metal substitutes for gas emission reduction catalysts
	Develop new vehicles with a higher ratio of recyclable components	•Initiatives to create assembled structures that are easy to disassemble	•Incorporated considerations for recycling and disassembly in the design of vehicle structural components and created manuals explaining disassembly •Contributed to effective use of resources by reducing vehicle body weight.
Production and logistics	**Reduce waste from production and logistics, and use resources effectively**	•Adopt waste reduction technologies and promote waste reduction in regular improvement activities ・Facilitate more effective usage of resources by improving yield rates and managing the sources of waste ・Promote the usage of the Hino Motors Group's resource (Targets in Waste Reduction for FY 2020) Consolidated Companies in Japan ・43% reduction of amount of waste generated per unit compared to FY 2008 ・Zero for final disposal amount* Overseas Operations ・Management of the amount of waste reduction Definition of Zero: Landfill amount including ash after incineration is not more than 0.5% compared with total waste including recyclable waste *Definition of Zero: Landfill amount including ash after incineration is not more than 0.5%,compared with total waste including recyclable.	(Results) Consolidated Companies in Japan ・Reduced amount of waste generated per unit by 38% compared to FY2008 ・Achieved a final disposal rate of 0.09% We will continue reducing activities through each conference Overseas operations ・Set targets for waste matter in each country and proceeded to make reductions
	Initiatives for reducing water usage in production activities	•Promote activities for reducing water consumption in consideration of water supply conditions in each country and region where the Group operates ・Conserve water through actively introduce water-saving technologies and continual improvement (Targets in Water Usage Reduction for FY 2020) Consolidated Companies in Japan 40% reduction of water usage per unit compared to FY 2008 Overseas Operations ・Management of water usage reduction	(Results) Consolidated Companies in Japan ・Reduced water usage per unit by 46% compared to FY2008 Further water-saving equipment to be installed and recycling promoted. Overseas operations ・Set targets in each country and proceeded to make reductions
	Initiatives for reducing usage of packaging materials and use resources effectively	•Reduce usage of packing and shipping materials by making them returnable and more lightweight ・Enable use of returnable racks in more countries ・Improve methods of packing vehicle parts (Targets in Packaging Materials Usage Reduction for FY 2020) Consolidated Companies in Japan ・57% reduction of shipment volume per unit compared to FY 2008 Overseas Operations ・Calculate the amount of packaging materials used and expand activities to reduce them	(Results) Consolidated Companies in Japan ・Reduced amount of packaging materials used per unit of shipment volume by 63% compared to FY2008 Further efforts to assess impact due to plant relocation and to promote emissions reduction activities. (Future Challenge) Continue to pursue efforts to reduce emissions Overseas operations ・Promoting reduction activities in each country

2020 Environment Initiative Plan **Environmental Conservation & Creation of Society Coexisting in Harmony with Nature**

Challenge of Minimizing the Impact on Biodiversity

Field	Item	Specific Action Items/Targets, etc.	Fiscal 2017 Achievements and Challenges for the future
Product development	**Reduce gas emissions to help improve urban air quality in each country and region**	•Introduce vehicles with lower gas emissions to help improve urban air quality in each country and region Japan ・Release vehicles to the market that comply with Japan's 2016 exhaust emission regulations ・Research and develop new technologies to comply with new exhaust regulations starting in 2016 United States ・Bring vehicles to market that comply with US13, and Develop vehicles that comply with U.S. exhaust emission standards effective from 2016 Europe and developed countries ・Develop and release vehicles to the market that comply with EURO 6 exhaust emission standards General ・Introduce low-emission vehicles (EURO4 or 5 level)	•Released new models of Hino Profia heavy-duty trucks and Hino Ranger medium-duty trucks; newly developed engines with dual-stage turbo systems, featuring technologies which reduce frictional resistance and comply with fiscal 2016 gas emission regulations due to improvements to engine control and exhaust emission after-treatment devices •Released an improved model of Hino Dutro light-duty trucks and added vehicles to the lineup that comply with fiscal 2016 gas emission regulations •Released an improved model of Hino S'elega heavy-duty tourist buses ; all buses now comply with fiscal 2016 gas emission regulations due to improvements to engine control and exhaust emission after-treatment devices
	Further reduce the use of environmentally harmful materials	•Collect and manage information on increasing regulations in each country where the Group operates, and take the lead in switching to alternative materials	•Collected and managed all material data including that for unregulated substances. •Establish early measures for gas emission regulations.
Production and logistics	**Reduce substances that impact the environment in production activities (VOC)**	•Promote reduction of VOCs through constant improvement ・Reduce the use of painting materials and thinners in vehicle painting work (Targets in Body Painting Reduction for FY 2020) Hino Motors Ltd. ・Reduction of VOC emissions by 22 grams per square meter of painted surface area Overseas Operations ・Broaden initiatives for VOC emissions reductions (Other Painting Work Targets for FY 2020) Hino Motors Ltd.: ・Set annual reduction targets on a per-vehicle basis every year Overseas Operations ・Management of VOC reduction performance	(Results) Hino Motors, Inc. ・Achieved 19 grams of VOCs per square meter of painted surface area ・Promote initiatives relating to renovation plan for painting equipment and facilities and continued efforts to reduce volatile organic compounds (VOC) through constant improvements. Overseas Operations ・Currently compiling results
Social contribution	**Implement biodiversity preservation activities locally at factories in every region where the Group operates**	•Promote initiatives based on biodiversity guidelines ・Carry out regular activities in consideration of the unique ecosystems surrounding the factories in each country and region (including forest conservation and protection of local habitats) ・Undertake environmental conservation initiatives together with local residents and children	•Carried out initiatives in consideration of ecosystems surrounding workplaces in countries worldwide Hino ・Weed clearing in Ome City Koga ・Weeding using goats USA ・Clean-up along the Ohio River Further efforts to spread awareness of the Guidelines within the Company and promote related activities.

2020 Environment Initiative Plan **Environmental Management**

Field	Item	Specific Action Items/Targets, etc.	Fiscal 2017 Achievements and Challenges for the future
Manage-ment	**Strengthen and promote group environmental management**	•Japan and overseas companies ・Activities to ensure No.1 of environmental performance in each country and region ・Comply with environmental laws in each country and region, and enhance activities to prevent environmental risk	•The Company's activities are listed below. Issued periodic reports on environmental performance and improvement initiatives at group companies in and outside Japan Made progress in eco-factory initiatives at group companies in and outside Japan •Compiled list of requests and created diagnostic tools in order to launch environmental management systems (EMS) diagnosis at overseas production sites. •Achieve further improvements by holding interactive seminars and workshops to improve capa bilities
	Promote environmental activities in collaboration with business partners (Our suppliers)	•Suppliers ・Compliance with laws by suppliers, and enhance management of substances that impact the environment contained in parts, raw materials, secondary materials, production equipment, etc. Request for environmental performance activities	•Suppliers Began improving and employing in-house chemical management systems to account for stricter global chemical substance regulations
	Promote environmental activities in collaboration with business partners(Dealers and distributers)	•Sales in Japan ・Promote environmental activities by sales companies via each Environmental Management System. •Sales outside Japan ・Grasping the burden on the environment and act continually to raise awareness of the environment	•Consolidated subsidiaries in Japan ・Implemented environmental activities at 226 dealers across Japan to facilitate related improvements and upgrades ・Certified two more dealers as Eco-Management Dealers, bringing the total to 225 nationwide •Overseas Sales Operations ・Shared environment-related data monthly with overseas sales offices ・Held events to promote environmental awareness during World Environment Month in June
	Improve global human resources development and training programs	•Systematically implement environmental education •Awareness training programs for every employee	Implemented the following initiatives •Conducted ISO internal environmental audit education •President delivered a message for environmental month (June) •Issued the environmental newsletter Environment in the News (published 4 times annually) •Implemented an explanatory meeting for employees in which the president spoke about Hino Environmental Challenge 2050 The Company will continue actively taking initiatives to improve the environment, including planning events featuring employee participation.
	Actively disclose environmental information and enhance communication	•Enhance provision of information on product environmental technologies in each country and region (e.g. exhibiting at expos) •Continually publish CSR reports and other documents in each country and region, and publish at more sites •Enhance environmental communication in each country and region	•The Company's activities are listed below. Exhibited Hino Motors' new fuel-efficient engines and introduced the Company's environmental technologies at the Automotive Engineering Exposition.

CHALLENGE! 1 New Vehicle Zero CO_2 Emissions Challenge

TARGET While driving

Reduce CO_2 Emissions By 90%

Against the backdrop of increasing global warming, it was agreed at the 21st session of the Conference of the Parties (COP 21) to the United Framework Convention on Climate Change to keep the temperature rise under two degrees compared to the time before the industrial revolution. This goal is necessary for reducing the CO_2 emissions that are one of the contributors to global warming.

Hino Motors will take on the challenge of reducing CO_2 emissions during vehicle operation, which accounts for about 90% of CO_2 emissions in the truck and bus life cycle. Therefore, Hino Motors will take on the challenge of raising environmental performance, such as fuel efficiency, as much as possible, while raising the distribution efficiency of trucks.

Developing
Next-generation vehicle

Hino Motors will improve product environmental technologies and develop next-generation vehicles including plug-in hybrid vehicles (PHV), electric vehicles (EV), and fuel cell vehicles (FCV). Concurrently, the Company will collaborate with governments and other related organizations and play a role in their spread.

Evolve
Existing technologies

Hino Motors will further raise fuel efficiency of diesel (DE) and hybrid vehicles (HV), efficiently recover the energy generated during braking , and improve aerodynamic performance of the products.

Make distribution
More efficient

Hino Motors will help improve waste and inconsistency in collaboration with customers by incorporating IoT technologies in vehicles and enabling the "visualization of distribution." Above all, Hino Motors recommends using heavy-duty trucks in mainline transport where long-distance distribution is the norm and using light-duty trucks in urban areas. In addition, the company will promote technological development so that it can offer logistics matching, which properly manages information on trucks that are in or out of operation.

Hino Motors' Environmental Technologies

Existing technologies

Trucks and buses are made to transport large numbers of people or goods over relatively long distances, and fuel and energy are needed to do that. As a result, emission of CO_2, a greenhouse gas, is inevitable.

Unique aspects of trucks and buses include their comparatively large size and loading capacities, the long distances they travel, and their wide array of uses and places where they are used. Taking into account these varying conditions, Hino Motors considers what types of environmental technologies are most suitable. By providing users with optimally equipped vehicles, the Company hopes to help curb global warming.

Initiatives for Next-generation Vehicles

Hino Motors capitalizes on the unique benefits of electric vehicles such as clean exhaust gas emissions and quietness of ride to create next-generation vehicles that meet customers' and society's needs.

Hino primarily pursues development for applications in urban areas such as light-duty trucks and buses and route buses.

Hino will continue to develop vehicles along with related technologies including batteries, while seeking to reinforce social infrastructure, such as charging facilities and hydrogen stations, in cooperation with relevant organizations. The ultimate goal is to offer electric or hydrogen power options on all models.

Hino Motors' Highly Promising Technologies (Including trial experiments)

Next-generation vehicle | Existing technologies

◆ Hybrid Vehicles (HV)

● Hino Profia Electric Refrigeration Trucks

By combining its hybrid system technologies with Denso Corporation's automotive-use electric refrigeration system technologies, Hino Motors has developed a refrigeration truck that offers a complete lineup of benefits for customers, including economical operations, excellent refrigeration performance, superior quality, and extremely quiet running.

◆ Plug-in Hybrid Vehicles (PHV)

● Hino Melpha Plug-In Hybrid Bus

The Hino Melpha Plug-In Hybrid Bus can run as an electric or hybrid vehicle and supply electricity externally for relatively long periods of time from power generated by its diesel engine, making it useful for supplying electricity to evacuation centers and other facilities in times of disaster. Hino Motors made this possible by combining its many years of expertise developing hybrid systems with high-capacity lithium-ion batteries. This model is operating as a route bus and school bus.

◆ Electric vehicle (EV)

● Light-Duty, Low-Floor Electric Trucks

Hino Motors has collaborated with Japanese delivery companies Seino Transportation Co., Ltd. and Yamato Transport Co., Ltd. to commence trial operations of its electric light-duty trucks.
Since the trucks are powered by an electric motor, no exhaust gases are emitted while running and noise levels are very low, making them optimal vehicles for pick-up and delivery duties during late night or early morning hours.

Hino Motors succeeded in lowering the floor of the loading platform by leveraging the distinctive characteristics of EVs—the smaller power train and the front engine, front-wheel drive system.

● Light-Duty Electric Buses

Hino Motors' small-sized electric buses have begun service on fixed routes as community buses in Tokyo's Sumida Ward, the city of Hamura in the Tokyo Metropolitan area, and the city of Komatsu in Ishikawa Prefecture. Hino Motors made the batteries as small as possible and extended the battery life. As a result, the feasibility of operating the buses on fixed routes has been verified.

◆ Fuel Cell Vehicle (FCV)

● Fuel cell bus "SORA" (in collaboration with Toyota Motors)

Fuel cell buses that operate on their own generated hydrogen as a fuel source have a high environmental performance of zero CO_2 emissions during operation.

Hino Motors will make further improvements with the aim of popularizing FC buses and will also consider adopting fuel cells in trucks.

*Hino Motors has been entrusted by Toyota Motors with the development of the vehicle body

◆ Diesel

● Hino Profia Heavy-Duty Trucks

Through downsizing, the new A09C engine offers high levels of both power and fuel economy. The new 9-liter engine installed in a ProShift-equipped vehicle has achieved performance that is 10% above heavy-duty vehicle fuel efficiency standards.

● Hino Ranger Medium-Duty Truck

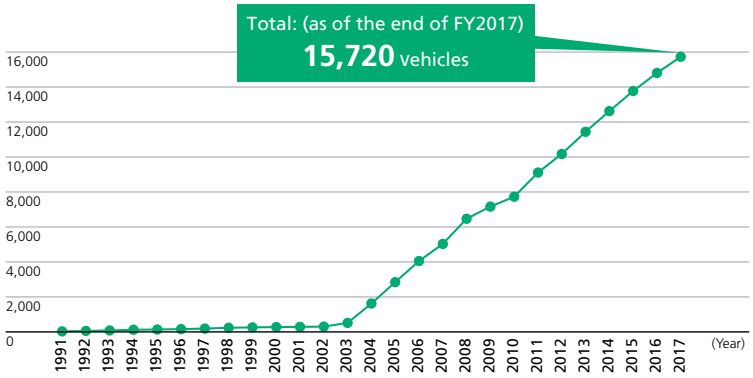
Through downsizing, the new A05C engine offers high levels of both torque and fuel efficiency. By combining this engine with an advanced transmission, Hino provides a broad range of vehicle types with performance that is 5% above heavy-duty vehicle fuel-efficiency standards.

Evolution of the Hybrid Vehicle

Next-generation vehicle | Existing technologies

Ever since Hino Motors commercialized and sold the world's first hybrid bus in 1991, the Company has constantly led the industry in environmentally friendly products. Hino Motor's environmentally friendly products continue to be loved by customers around the world.Among these products, cumulative sales of hybrid vehicles surpassed 15,000 as of the end of fiscal 2017.

● Hybrid Vehicle Sales Volume



Hino Dutro Hybrid

Hino Blue Ribbon II Hybrid

TOPIC

Heavy-duty Hybrid Truck Employing World-first Technology to Be Launched in Summer 2019

Hino Motors plans to launch the Hino Profia Hybrid, an innovative heavy-duty hybrid truck that combines high-level advanced performance and safety technology.

Thanks to hybrid control that pre-reads the road gradient using artificial intelligence (AI), Hino Motors has achieved the world's first hybrid system with fuel economy even in vehicles that run at high speeds , a feat considered difficult until now.

The system maintains the same fundamental performance and ease of use as offered by a diesel vehicle, reduces fuel consumption by about 15% (based on internal data), and is expected to cut vehicle operating costs.

The large-capacity lithium-ion battery in the truck can be used as an external emergency power supply. Moreover, noise and vibration are reduced during vehicle operation, which helps to alleviate driver fatigue.

The heavy-duty Hino Profia Hybrid truck.

CHALLENGE! 2 Life Cycle Zero CO_2 Emissions

TARGET

Vehicle Life Cycle –from manufacturing to disposal-

Zero CO_2 Emissions

The Hino Group emits CO_2 gas, one of the causes of global warming, not only when its products such as trucks and buses are operated and when manufacturing vehicles in its plants, but in all product life cycle fields, from material manufacturing to disposal and recycling. The Hino Group will completely reduce the environmental impact of the entire supply chain and help combat global warming by pursuing zero CO_2 emissions in these fields.

At Materials manufacturing stage, reduce CO_2 emissions thoroughly

Hino Motors will reduce the amount of materials used and the number of parts to reduce CO_2 at the time of material manufacturing. The Company will select materials that reduce CO_2 emissions in the product development stage, such as by actively promoting the development of plastic parts to reduce CO_2 emissions during parts manufacturing.

At the Distribution stage, reduce CO_2 emissions thoroughly

The Company will thoroughly reduce CO_2 emissions, even at the distribution stage, which links together each step of the product life cycle. As a commercial vehicle manufacturer, not only rigorously working to spread next-generation and fuel-efficient vehicles in commercial vehicles that assist in the movement of goods, Hino Motors also collaborates with logistics service providers to increase loading ratios, conduct a modal shift, and shorten distribution routes.

In the medium to long term, Hino Motors will participate in comprehensive measures in the road transport sector in collaboration with the government. These measures include traffic flow countermeasures such as expressway improvement and traffic signal countermeasures and the deregulation of vehicle height and total trailer length.

At the Disposal and recycling stage, reduce CO_2 emissions thoroughly

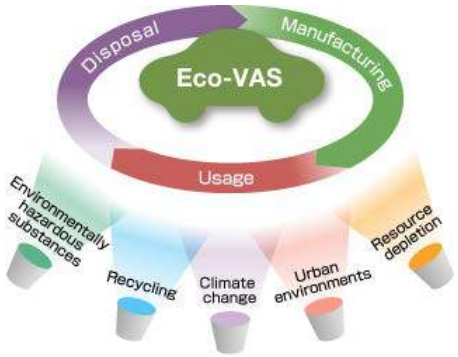
Hino Motors will proactively introduce materials including biomaterials and recycled materials that help reduce CO_2 emissions at the time of vehicle disposal and recycling. In parallel with efforts related to the introduction of these materials, Hino Motors is targeting products that are easy to disassemble and recycle, and the Company is pursuing easy-to-disassemble designs while collaborating with professional dismantlers in everything, all the while listening to their needs.

Environmental Load Reduction Activities Based on Life Cycle Assessment (LCA)

At Materials manufacturing stage **At the Distribution stage** **At the Disposal and recycling stage**

Factors such as measures for new regulations, vehicle performance enhancement efforts, and others can increase environmental burden during the process of manufacturing. Hino Motors is aiming to further reduce its environmental load by employing the Eco-Vehicle Assessment System, an environmental product management system that incorporates a lifecycle approach during product development.

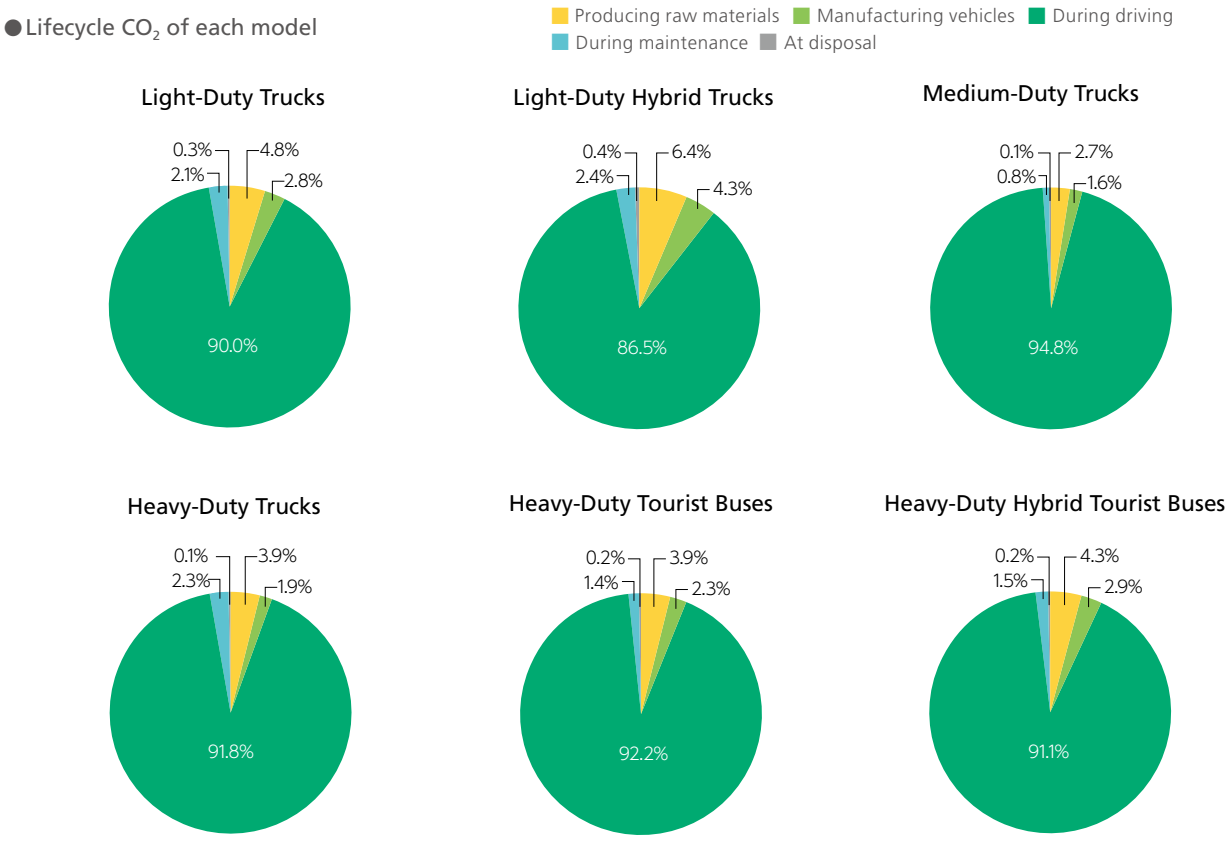
*Eco-VAS is a framework for setting targets to reduce the environmental burden from the products from the early vehicle development stage and for making steady reduction of environmental burden based on LCA methods.



◆ LCA Initiative

Life Cycle Assessment (LCA) is an analysis method that quantitatively measures environmental impact throughout the life cycle of products such as trucks and other vehicles, from manufacturing to use and eventual disposal. Hino Motors has been employing LCA since 2008 to track CO_2 emissions over the life cycle of its truck and bus models. The results for each type of vehicle are shown in the charts below.

● Lifecycle CO_2 of each model



*The graphs are results computed by Hino's proprietary calculation conditions. Fuel efficiency uses the heavy-duty vehicle mode's fuel-efficiency value. Evaluation results show the entire lifecycle of each as a percentage of 100%

Reducing CO_2 Emissions in Distribution Operations

Logistics

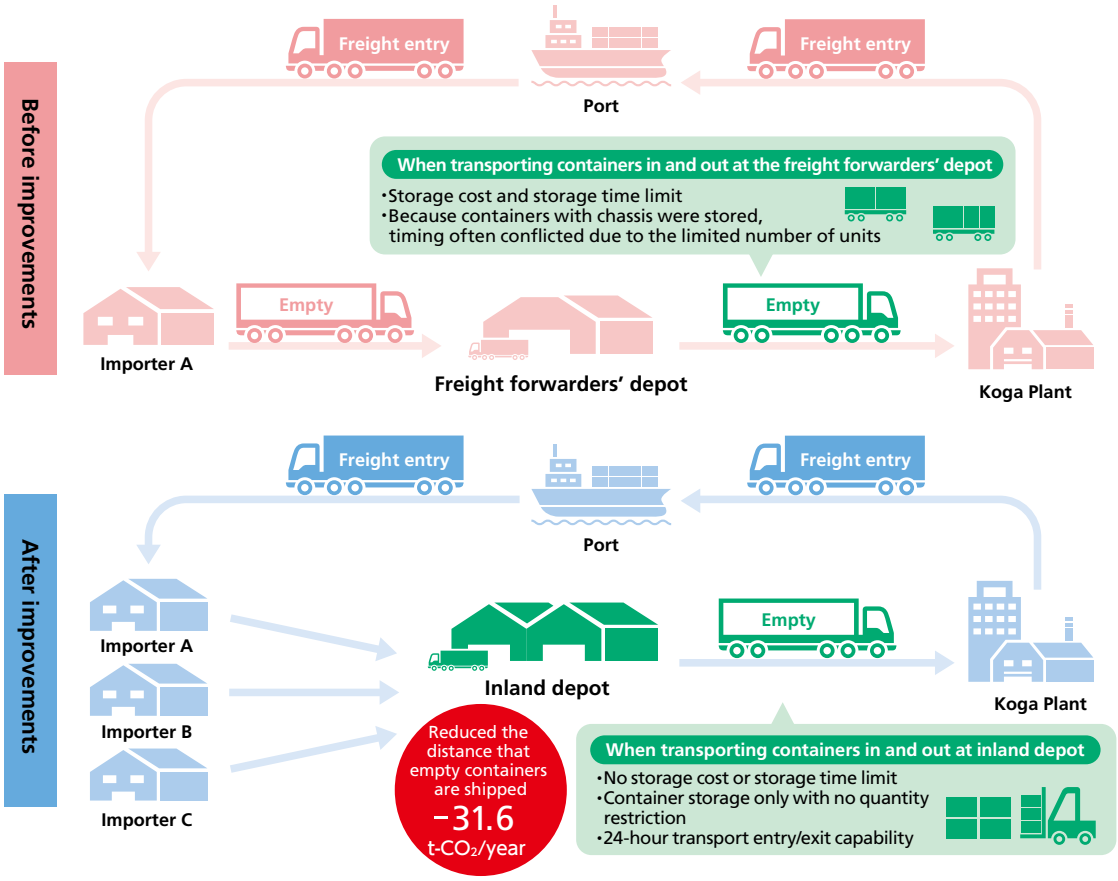
◆ Initiatives to reduce CO_2 emissions from distribution

Under the guidance of the Logistics Improvement Council, Hino Motors is carrying out the following initiatives aimed at reducing CO_2 emissions from distribution-related operations:

1. Improving loading rates by integrating transportation routes and conducting joint shipments
2. Shortening transportation distances by packaging at the point of production to enable direct shipments
3. Increasing shipment volume using vehicles with higher tonnage (load volume) and utilizing different types of vehicles such as trailers
4. Promoting a modal shift to ships and other forms of transportation

Example | Promoting Round-Trip Use of Shipping Containers by Utilizing Inland Depot

When promoting the round-trip use of other companies' import containers for Hino Motor's exports, the containers had been consigned to a freight forwarder and then diverted, but there had been times when the timing of the import and export conflicted. Therefore, by utilizing the inland depot operated by the freight forwarder, containers could be transported in and out at any time, thereby substantially improving the container diversion rate.



Eco-Driving Support

Logistics

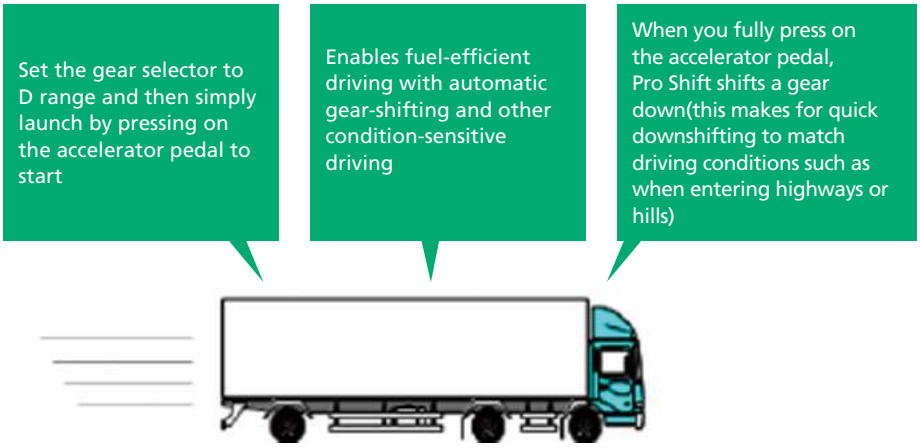
Hino Motors will continue to support customers' eco-driving capacities as it strives to remain a company trusted worldwide.

◆ Pro Shift (mechanical automatic transmission): Support for gear shifting

To support eco-driving, the engine has to stay in the rpm range best suited to each situation by changing gears in a suitable manner.

Pro Shift shifts gears automatically to ensure that the truck stays in the green zone on the fuel economy meter. This enables even truck drivers with little experience to drive like good eco-driving professionals.

● Example of main features of Pro Shift



◆ Eco-driving Seminars

Hino Motors holds "Eco-driving" classes in Japan and overseas as a part of its endeavors to contribute to the environment and customers.
In fiscal 2017, a total of 16,333 students (1,338 in Japan and 14,995 overseas) took these classes. The classes are popular because students can learn eco-friendly driving and they improve corporate profitability.

As of July 2017, the Customer Technical Center in the Hamura Plant had welcomed a total of 80,000 visitors since it was established in 2005.

Overseas, the Hino Total Support Customer Center (HTSCC) at Hino Motors Sales (Malaysia) Sdn. Bhd. completely renovated its facility in 2017 to enable visitors to experience various driving conditions in response to the increasing number of visitors and to meet the varied demands of customers.


Hino Total Support Customer Center in Malaysia


Educational training

◆ Eco Tree Report

In order to provide eco-driving support to customers, Hino Motors products feature an "Eco Tree" display function. A tree icon grows more leaves as the level of eco-driving increases.

Furthermore, by providing complementary Eco Tree reports that contain automated analysis of each individual customer's driving status and serve as a useful source of information for eco-driving and drive management, Hino Motors supports customers in terms of environmental awareness and safety.

Standard feature for Profia, Ranger, and S'elega models released in 2010 and later (exhaust emission symbols LKG and LDG onward). Standard feature for Dutro Hybrid models released in 2014 and later.

Eco Tree


Eco Tree Report

◆ Customer Assistance Programs

In collaboration with its dealers in Japan, Hino Motors carries out customer assistance programs that go beyond the scope of selling Hino vehicles. The programs are designed to provide comprehensive assistance for customers' operations and include training in driving methods and education to help enhance fuel efficiency. The customer assistance programs offer 31 programs divided into categories such as environmental measures, safety maintenance, and human resources development.


A scene from training programs for customers

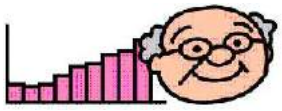
● Strengthening Business Platforms

Propose improvements based on Hino Eco Tree Report utilization

Reveal driving condition details unknown to the digital tachograph and propose safety and fuel efficiency improvements

● Strengthening Business Platforms

Eco-driving Seminars



Learn practical driving skills and gain a better understanding about how to improve fuel efficiency

● Strengthening Business Platforms

Guidance on subsidies and financing of low-emission vehicles

Guidance on various subsidy and financing programs when considering the purchase of a vehicle

● Strengthening Business Platforms

Assistance in obtaining permits for the collection and haulage of industrial waste

Explanation of the process up to permit acquisition and assistance with permit application

● Environmental Measures

Assistance in obtaining green management certification

Suggestions on obtaining certification as a means of calling attention to one's approach to environmental initiatives and assistance in obtaining certification

● Environmental Measures

Assistance in reducing CO_2 emissions

Advice provided on carbon dioxide reduction (vehicle selection, eco-driving, and transportation efficiency

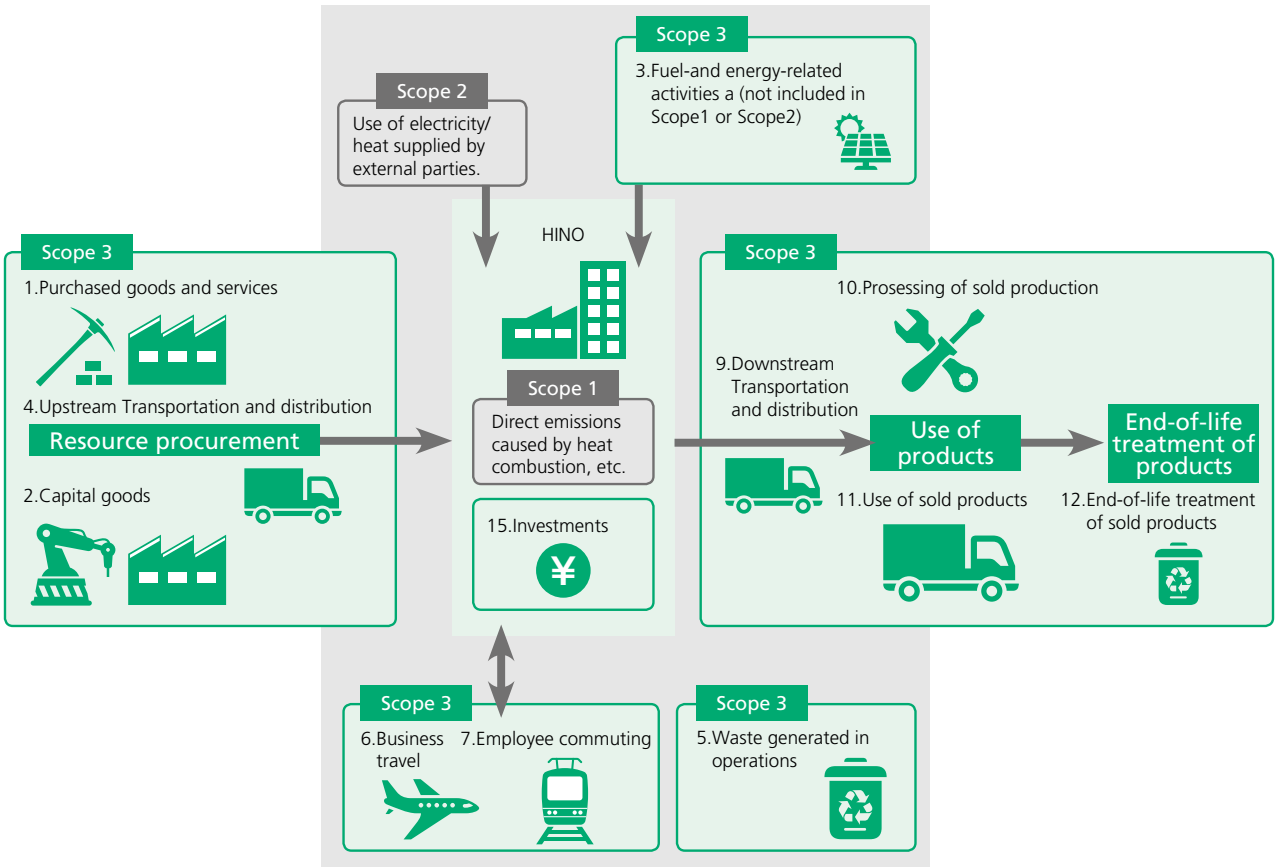
Handling Scope 3 Emissions

At Materials manufacturing stage **At the Distribution stage** **At the Disposal and recycling stage**

Companies are expected to calculate and disclose the greenhouse gas (GHG) emitted along the entire supply chain.eco-driving professionals. Hino Motors calculates Scope 3 emissions, as well as Scope 1 and 2 emissions, based on GHG reporting guidelines.

Ratios of calculated emissions show that the combined percentages for Category 1 (Purchased Products and Services), Category 10 (Processing of Products Sold), and Category 11 (Use of Products Sold) account for approximately 98% of the total, with the remaining categories accounting for less than 1% each. Hino Motors will continue to strengthen management of CO_2 emissions along its entire supply chain, while also focusing on CO_2 reduction activities.

	Category	Emission rate
Scope 1	Direct emissions caused by heat combustion, etc.	0.2%
Scope 2	Use of electricity/heat supplied by external parties.	0.3%
Scope 3	1.Purchased goods and services	4.4%
	2.Capital goods	0.4%
	3.Fuel-and energy-related activities a (not included in Scope 1 or Scope 2)	0.1%
	4.Upstream Transportation and distribution	Less than 0.1%
	5.Waste generated in operations	Less than 0.1%
	6.Business travel	Less than 0.1%
	7.Employee commuting	Less than 0.1%
	8.Upstream leased assets	—
	9.Downstream Transportation and distribution	Less than 0.1%
	10.Prosessing of sold production	1.5%
	11.Use of sold products	92.7%
	12.End-of-life treatment of sold products	0.2%
	13.Downstream leased assets	—
	14.Franchises	—
	15.Investments	0.1%



CHALLENGE! 3 Factory with Zero CO_2 Emissions

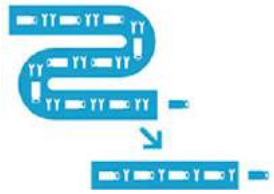
TARGET

Factory with Zero CO_2 Emissions

Because CO_2 is emitted from each business site when products are produced, this effort to reduce CO_2 in the factories is essential to mitigate global warming.

In addition to pursuing continual improvement and introducing innovative technologies at production sites, the Hino Group will concurrently promote the active use of renewable energy while striving to attain the high target of "zero factory CO_2 emissions".

Acceleration of Continual improvement



Hino Motors will accelerate continual improvements that are being taken at production sites, reduction of machining time, completely eradicate overburden, waste and inconsistency dormant in each process, and promote simplification and streamlining by reduction the machining time, the number of processes, and length of the machining line.

Introduction of Innovative technology

Hino Motors will take steps to automate production while rigorously pursuing greater efficiency by actively introducing innovative technologies including IoT at production sites to further reduce CO_2 emissions in each process.

Proactive use of Renewable energy

The Hino Group has introduced renewable energy such as solar power, mainly at production sites. Hino Motors will seek to fully use environmentally friendly energy by further accelerating the pace of its introduction and ensuring that the energy used in each process is covered by renewable energy.

Daily Improvement Initiatives

Continual improvement

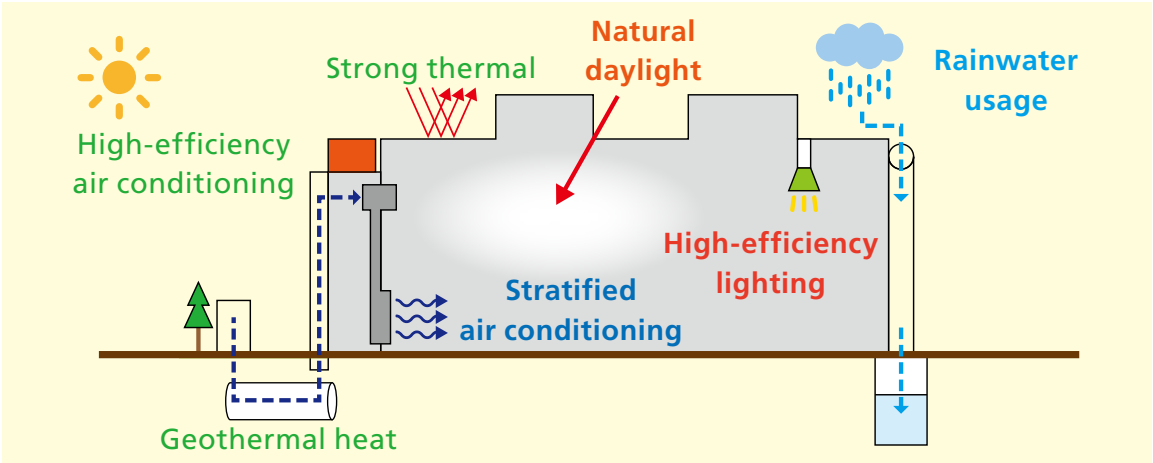
Recognizing climate change as one of the major challenges facing humanity, Hino Motors is working hard to reduce CO_2 emissions. In its continuing endeavors to reduce CO_2 emissions, the Company is carrying out regular activities with the participation of all employees to improve efficiency at all of its production sites, while also striving to reduce wasted energy. In fiscal 2017, the Company formulated a new long-term environmental vision for the future, the Hino Environmental Challenge 2050. It also launched the Factory Zero CO_2 Emissions Challenge that same year, aiming to eliminate CO_2 emissions due to production activities by 2050. Pursuing these challenges, Hino Motors has implemented a wide range of daily energy-saving activities.

Major Initiatives

- Adopting electric booster pump systems
- Replacing fluorescent lighting with LEDs
- Applying thermal insulation paint to furnaces
- Switching to electric transport vehicles inside plants

Example | Creating a plant that utilizes natural energy

The Koga Plant, which started full operation from September 2017, is proactively using natural energy such as air conditioning that utilizes geothermal heat and natural daylight from the sky. The plant is also working to effectively reduce CO_2 emissions by promoting greater efficiency in other equipment including air conditioning and lighting. Through daily improvements including these, Hino Motors will continue to work toward "zero factory CO_2 emissions."



The Koga Plant is also creating a workplace environment where it is easier for employees to work
(Please refer here [page 86] for examples of key initiatives).

Example | LED lighting in the factory

At overseas factories, we are working to reduce the environmental impact in our factories through kaizen activities. PT. HINO MOTORS MANUFACTURING INDONESIA is working on CO_2 reduction at the assembly plant, and as part of it, we replaced Mercury lamps on the premises of the factory with LED lamps. Total replacement of 8 pieces has been implemented. As a result, the amount of electricity used decreased by 22,116 kWh per year, resulting in a reduction of 16.3 tons of CO_2 emissions per year.

Before improvements

Mercury Lamp (1,000 W)

After improvements

LED Lamp (360 W)

Example | Introduction of electric forklift

Hino Motors Manufacturing Colombia, S.A. has introduced electric forklifts instead of combustion forklifts fueled by gasoline or LPG. Before the introduction, we had consumed 48 gallons of gasoline and 40 cylinders of LPG per month, and total emission of CO_2 was 767.2kg-CO_2 per month. By using the electric forklifts, the CO_2 emission was reduced by one fourth with 940 kWh of electricity per month. As a result, we would continuously reduce 7t-CO_2 per year compare to use of combustion forklifts.

Before improvements

After improvements

Initiatives related to renewable energy

Renewable Energy

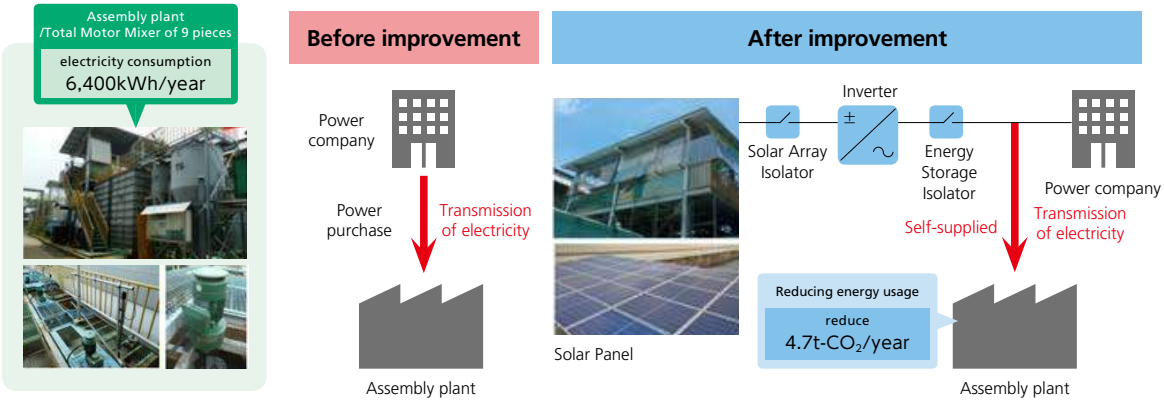
Hino Motors is installing solar power equipment as an initiative to make use of renewable energy. Electricity generated by the equipment is used for lighting inside its factories and offices as well as outside lights on the premises.

In the future, Hino Motors plans to pursue initiatives that not only save energy at its existing business facilities but also incorporate the broader perspective of combating climate change.

Solar panels installed at the Koga Plant 2.1 kw

Example | Introduction of solar cell system

PT. Hino Motors Manufacturing Indonesia is working on saving energy by introducing solar cell system for power sources to motor mixer in assembly plant at Waste Water Treatment Plant area. Having introduced the renewable energy source, we have been able to not only independently supply electricity but also save about 6,400 kWh of energy, which was an annual amount of energy used for nine pieces of the motor mixers. As a result, we succeeded to reduce 4.7t-CO_2.



VOICE

As a good corporate citizen, we practice environmentally conscious production activities

Plant Manager, HMMI

Subkhan Purnama

We practice production activity considering the environment as a good corporate citizen. In order to do so, our company is ISO14001 certificated in 2005 and build an environmental management system at early stage after factory startup. As part of activities, I participated in the environmental rating "PROPER" conducted by The Ministry of Environment and Forestry (Indonesia) and acquired the second highest ranking from the top (Green Proper) .

Specially, we act on 3 major principles of the production environment, annually.

- To achieve zero abnormality and zero complaints by following the law
- To minimize the environmental risk by preventive activity
- improving the environmental performance (CO_2 reduction, water usage , waste ,etc.)

Through the environmental management system, we believe it is important to contribute to the sustainable development of companies.

CHALLENGE! 4 Challenge of Minimizing and Optimizing Water Usage

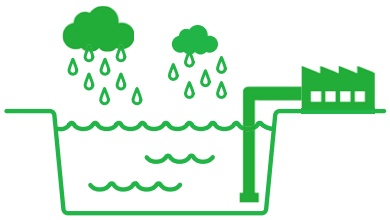
TARGET At each site

Minimize the amount of water Purify wastewater thorouly

Today, when about 1.2 billion people, or 20% of the world's population, are unable to use water resources (according to the Ministry of the Environment's website), and it is thought that such shortages will grow even further due to forecasted population increases. Hino Motors will work to reduce water use while promoting the purification of wastewater when it naturally returns from each business site, and work with the local community on water resource issues.

Volume

Small amounts of water are used



To reduce the amount of factory water that account for much of usage of water resources, The Hino Group will thoroughly promote wastewater collection and reuse. To proactively use rainwater, the Company has set up a storage pit within the premises with the aim of further reducing the amount of new industrial water input. Moreover, to reduce water for daily use, it will thoroughly implement measures (water-saving dishwashers, water-saving packing, etc.) to be used in facilities including cafeterias, toilets, and hand-wash stations.

Quality

Returned water is purified

The Hino Group promotes the thorough purification of wastewater by enhancing the operation of wastewater treatment plants and wastewater purification facilities at each site based on strict standards. At the same time, the Company will strive to prevent wastewater quality deterioration by rigorously reducing the risk of liquid leakage.

Initiatives for Conserving Water at Factories

Small amounts of water purified

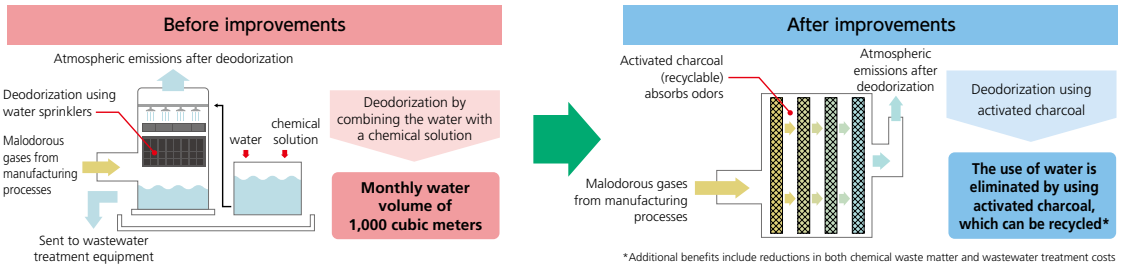
Water is essential to the manufacturing of trucks and buses. To make effective use of precious water resources, Hino Motors has established the Hino Environmental Challenge 2050, its long-term environmental vision, and is working to reduce water usage every day. Hino will continue to work on water-saving activities with the aim of fulfilling the Challenge of Minimizing and Optimizing Water Usage.

Major Initiatives

- Eradication of wasteful use with a water-saving patrol (leakage/overflow [effluent])
- Water-saving educational activities (using posters and other materials to communicate)
- Effective use of rainwater and wastewater treatment plant's treated water

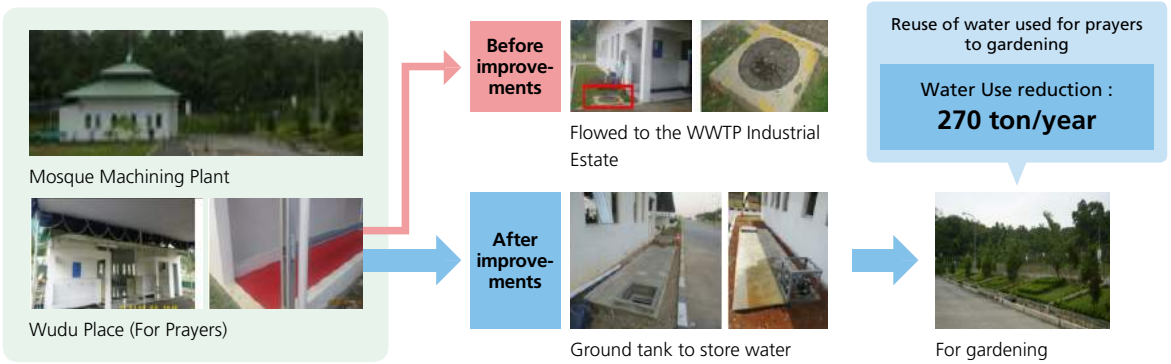
Example | Reducing water usage by phasing out chemical solution-based deodorization equipment

At its metal casting production facilities, Hino Motors had been eliminating odors contained in malodorous gases from manufacturing processes by using a method of combining water and a chemical solution. As a new initiative, the Company reduced the amount of water and chemicals its uses by switching to a deodorization method using activated charcoal, which can be recycled.



Example | Effective Use of Domestic Wastewater

At the machining facility of PT. Hino Motors Manufacturing Indonesia, drainage water used in a prayer room (mosque) inside the factory is first stored in a tank and then reused as irrigation water for greenery.



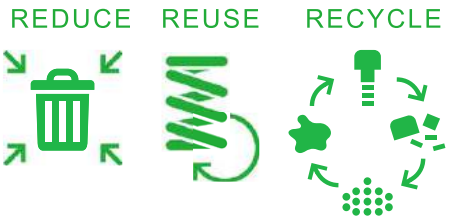
CHALLENGE! 5 Challenge of Achieving Zero Waste

TARGET At each site

Contribute to sustainable resource use Achieve zero waste

The world's population is increasing and the risk of resource depletion on the back of economic development is rising. Furthermore, waste that has become a by-product of a mass consumer society continues to increase, and if things continue at this pace it cannot be properly disposed of and will lead to serious environmental pollution. The Hino Group has set the high target of "zero waste," and in parallel with efforts to reduce waste, the Group will take steps to prevent environmental pollution by improving resource utilization efficiency.

Conduct 3R to achieve Zero waste



To reduce the waste discharged in manufacturing a vehicle, Hino Motors cooperates with Group companies and business partners in "volume reduction," "reusing," and "recycling" based on the 3Rs (Reduce, Reuse, and Recycle) to reduce waste as much as possible.

3R Reduce Reuse Recycle

Newly manufactured vehicles using the resources from disposed vehicle

Components such as batteries and motors contain natural resources including rare metals and other precious metals. The Hino Group retrieves as many resources as possible from disposed vehicles, including the above-mentioned natural resources, and rigorously reduces the amount of new resource inputs by fully pursuing the "vehicle-to-vehicle recycling technologies" that are utilized in newly manufactured vehicles.

Recycling Initiatives at Production Plants

Zero waste

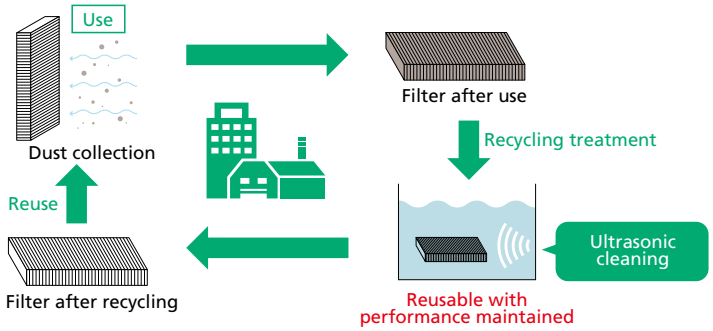
Hino Motors is also working to reduce waste as one activity targeting the Hino Environmental Challenge 2050, its long-term environmental vision. In recent years, Hino has thoroughly re-examined materials which it has not been able to recycle and is working to recycle them internally.

Major Initiatives

- Reducing the volume of wastewater treatment plant sludge
- Reducing the amount of sand used during molding
- Extending the life of waste liquid processing machinery by installing filtration filters

Example | Reusing Dust Collecting Filters

Dust collecting filters, which had to be discarded because their performance could not be restored, can now be reused after undergoing ultrasonic cleaning treatment.



Design with Recycling in Mind

Zero waste | Newly manufactured vehicles

Since 1990, Hino Motors has been involved in product development and design initiatives with recycling in mind. It established a Voluntary Action Plan in 1998, listing specific values for recycling rates with the goal of enhancing recycling activities. In recent years the Company has also engaged in efforts to comply with regulations on environmentally hazardous substances by reducing them at an early stage.

Hino Motors has pursued the challenge of enhancing recyclability from various perspectives, for instance by adopting easily recycled materials and designing components to be easier to disassemble, early in the product development process.

Environmental Activities at the Recycling Stage

Zero waste | Newly manufactured vehicles

To comply with the Automobile Recycling Law, which came into effect in Japan in 2005, Hino Motors has implemented a process of recovery, processing, and recycling of three materials designated by the law from end-of-life vehicles, namely automobile shredder residue (ASR), airbags, and chlorofluorocarbons (CFCs), with the help of a great many related businesses.

The ASR recycling ratio for fiscal 2017 was 98%, surpassing the legal standard of 70%. In addition, Hino Motors strives to promote eco-friendly manufacturing as early as the development stage by using recyclable materials and, where possible, easy-to-disassemble vehicle designs, thereby fostering the effective utilization of resources and contributing to the development of a recycling society.

CHALLENGE! 6 Challenge of Minimizing the Impact on Biodiversity

TARGET At each site

Establishing a future Society in Harmony with Nature

In recent years, biodiversity is rapidly disappearing around the world. Taking the speed of extinction of wild animals and plants as an example, it is said that one species becomes extinct every seven minutes (according to the Ministry of the Environment's website). The Hino Group receives immeasurable benefits from this biodiversity, while at the same time developing its influential business.

We will reduce as much as possible the impact that the Hino Group's business has on biodiversity and take on the challenge of creating a future where people and nature coexist in harmony.

Reduce future impact:
Community development and networking

Conservation of biodiversity for the next generation

Because the preservation of biodiversity is a problem that is not limited to the present and requires a long-term perspective, Hino motors will proactively conduct biodiversity education and hold related events to gain interest within that of local children, who will be the next generation's leaders. And it must build a system that addresses the entire region according to local characteristics through interaction with local communities, governments, and related organizations, along with collaboration and the promotion of subsidies for biodiversity-related activities in surrounding areas.

Reduce impact on local community:
Protect biodiversity

Protection of all species

The Hino Group will protect distinctive regional biodiversity in line with those characteristics by preserving rare and native animals and plants and eliminate non-native species. In addition, Hino Motors will contribute to ecosystem continuity in each area around its businesses and to the creation of an ecosystem network by proactively planting trees and developing the biotope after considering regional characteristics.

Considerations toward Biodiversity

Protection

Hino Motors has endorsed the Japan Business Federation's Declaration on Biodiversity, and after having also incorporated individual targets into the Company's five-year Environment Initiative Plan, in fiscal 2015 the Hino Motors Biodiversity Guidelines were formulated and the direction for Company activities and specific initiatives on biodiversity were set out and are now being advanced.

Going forward, the Company will promote various initiatives in consideration of biodiversity in accordance with the Biodiversity Guidelines in order to ensure coexistence with the ecosystems around Hino Motors and to continue to grow as a company. At the same time, Hino Motors plans to actively incorporate participation-based activities for employees as a means of tackling the issue of raising awareness and environmental consciousness among employees.

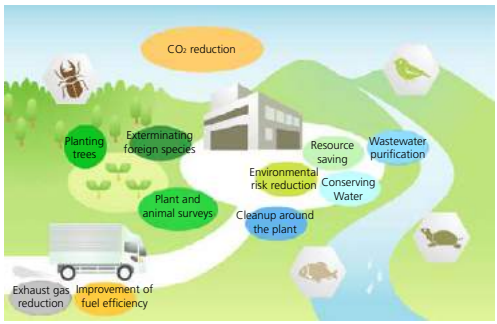
Biodiversity Initiatives

- Further pursuit of environmental technologies in products
- Consideration for regional water resources
- Contribution to biodiversity through steady promotion of environmental initiatives (CO_2 reduction, resource conservation, etc.)
- Collaboration and cooperation with communities
- Active information disclosure

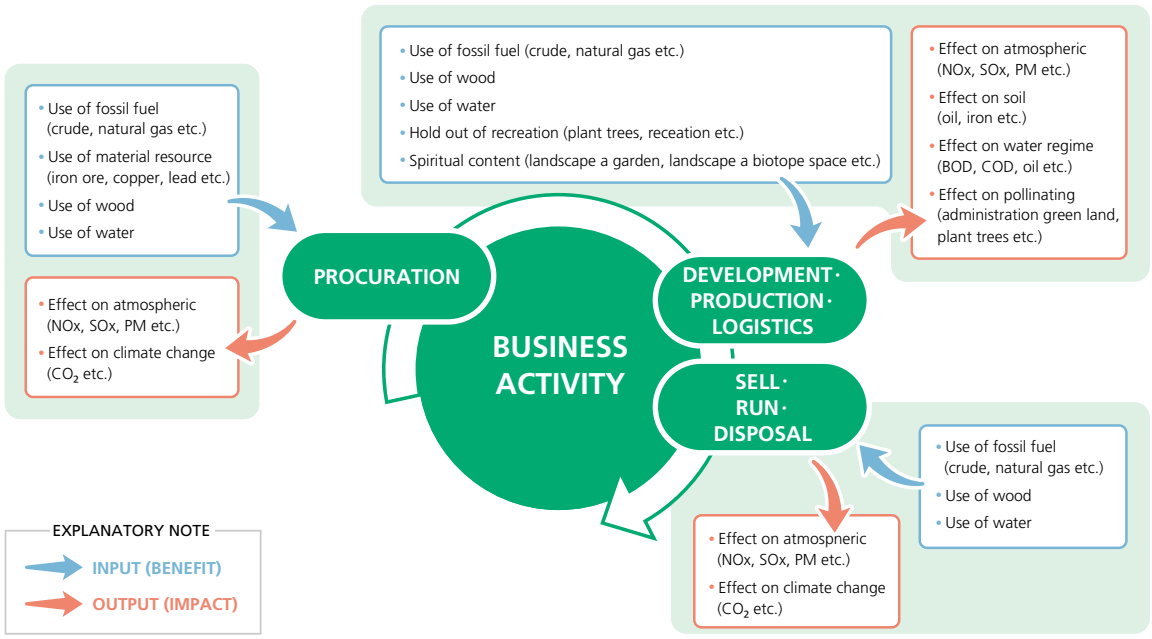
Categorizing the Interrelationship of Business Activities and Biodiversity

Protection

Referring to the Business & Biodiversity Interrelationship Map (see diagram below) devised by the Japan Business Initiative for Biodiversity (JBIB), Hino Motors has categorized benefits and impacts at each stage of the product life cycle. In this way, in the course of its business activities, Hino Motors simultaneously benefits from and impacts nature in the product life cycle as a whole. Hino Motors recognizes that every action counts, no matter how small. The Company is committed to reducing its environmental impact on biodiversity and ensuring that its business does not adversely affect surrounding ecosystems.



● Business & Biodiversity Interrelationship Map



Examples of Initiatives

Protection

◆ Plant and animal surveys at all business sites

In order to understand the ecosystems around its business sites, Hino Motors has implemented surveys into the habitats of plants and animals, predominantly in the green spaces and rivers in and around the sites. These surveys have shown the presence of many rare species that are on the International Union for Conservation of Nature (IUCN) Red List (list of threatened animal and plant species), including the soft-shelled turtle and White's thrush.

Aiming to ensure harmonious coexistence with the abundance of nature, Hino Motors will take various initiatives concurrently and also continue to implement regular plant and animal surveys.


Plant and animal surveys being implemented


Soft-shelled turtle


White's thrush


Goats at Koga Plant

◆ The "Hinodai no Mori" Garden

The "Hinodai no Mori" is a garden of approximately 6,000 square meters located at Hino Motors' head office. This garden was first cultivated in 1970, coinciding with the completion of the head office building. Beginning with the 13 cedar trees that were planted at the time of Hino Motors' foundation, the garden is today a lush growth of natural vegetation that harmoniously blends the spontaneity and strength of nature with abundant freshwater. Cultivated as an oasis of nature in the Musashino area, the garden is home to a wide variety of insects including cicadas, grasshoppers and water striders as well as such small birds as egrets.

Looking ahead, Hino Motors will continue to maintain and protect this natural treasure.


Hinodai no Mori

◆ Surveying the Ecosystem at a River Near the Koga Plant

At the Koga Plant, an educational event about aquatic organisms was held with local elementary school students at a regulating pond within the plant that directly connects to surrounding rivers.

As a result, many aquatic organisms in the area were identified and students learned how they are surrounded by rich ecosystems. This was an occasion to reaffirm that the Company must never forget to consider the surrounding organisms as it continue with its business activities.

Environmental Education

Conservation of biodiversity


Environmental education class

In Japan, Hino Motors promotes environment-related educational and awareness activities in an effort to raise the environmental consciousness of employees. In this manner, Hino Motors strives to enhance the overall efficacy of environmental conservation initiatives. Hino Motors believes that environmental activities extend beyond the domain of the corporate sector. It also recognizes the important role that each employee plays both in the workplace and at home. Therefore, as a part of the Company's employee training program, individual responsibilities and actions in the overall context of environmental issues as well as in global behavior and initiatives are emphasized. In specific terms, Hino Motors has continued to incorporate environmental education in its training programs for managers and new employees. Looking ahead, the Company will continue its endeavors to implement even broader-based, more systematic environmental education in its efforts to consistently raise environmental awareness in Japan.

● Number of students who received environmental training in FY2017

	Administrative/ Technical positions	Technical positions	Total
Number of students who received training	148	456	604

◆ Hino Motors Releases Environmental Newsletter

Published quarterly for all employees, with its focus on environmental news, the "Environment in the News" newsletter summarizes world and industry trends.

Every employee is interested in environmental issues and the newsletter is a chance for each person to consider what they can do.

◆ Cleanup Events in Areas Surrounding Business Sites

The Hino Plant, Hamura Plant, Nitta Plant and other nearby Group companies also cooperate and conduct local cleanup activities in areas surrounding each business site. Hino Motors seeks to raise environmental awareness and commuting etiquette by having employees perform the actual cleanup work.


Hamura Plant

◆ Participation in the Lights Down Campaign

Since 2007, Hino Motors has been participating in the Lights Down Campaign, an activity in Japan in which companies across the country turn off their lights to save energy.
Hino Motors' main business sites turn off their illuminated signboards and other lights for the campaign. A large number of Group companies also participate in the campaign, including domestic dealers.

Hamura Plant main gate unlit at night

Hamura Plant main gate lit at night

Environment-Related Communication with Stakeholders Conservation of biodiversity

Hino Motors recognizes the importance of communicating with its stakeholders. Accordingly, it proactively provides information to customers, members of local communities where it operates, and other stakeholders with the aim of being a trusted company.

◆ Exhibiting environmental technologies and products at public exhibits

Hino Motors showcased its environmentally friendly products and technologies at the 2017 Automotive Engineering Exposition in Japan, displaying Hino vehicles, engines, and other items. This event was an opportunity for visitors to deepen their understanding of engine structure and Hino's next-generation vehicle initiatives.

Exhibition Booth Crowded with Visitors

◆ Presenting environmental initiatives at local events

Hino Motors also presented its wide array of environmental initiatives at an environmental festival held in the city of Hamura, Tokyo and an ecological festival for Industry held in the city of Ota, Gunma.

At other environmental events in the communities surrounding its factories, Hino Motors carried out a broad range of public relations activities to present its approach to the environment and its related initiatives to local residents.


The environmental festival held in the city of Hamura

◆ Introduction of environmental initiatives to overseas governments

The Ministry of Environment and Forestry (Indonesia) visited a Hino plant to observe Hino Motors' environmental conservation measures. Along with introducing Hino Motors' environmental initiatives, it served as a venue for a valuable information exchange to introduce local environmental conservation measures.


Officials from the Indonesian Ministry of Environment and Forestry

The Hino Green Fund Foundation

The Hino Green Fund was established in 1991 to promote and foster environmental activities in Japan. Each year, the fund provides about 15 organizations with grants. Recognized for its dedication to addressing environmental issues, the Hino Green Fund received Japan's Environment Minister's Award in fiscal 2005. Going forward, the Hino Green Fund plans to continue providing steady and reliable assistance to various programs and activities and to conduct events.

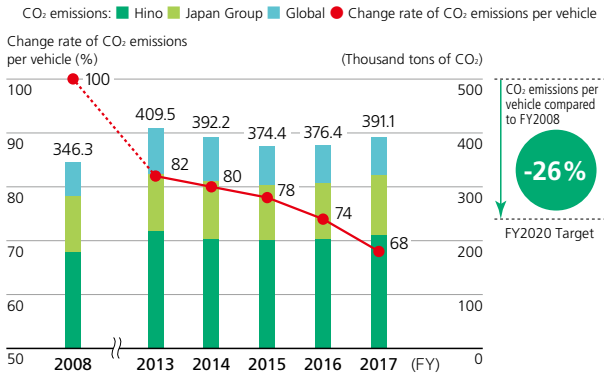
The Hino Green Fund Foundation


Fish catching experience (experiential events)

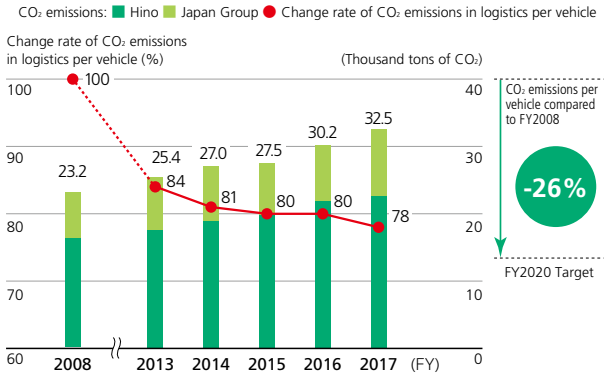
Key Performance Data

In the Hino Environmental Initiatives Plan, Hino Motors sets specific targets for reductions in the environmental impact of its production activities and works to reduce CO_2 emissions, resource use, and water use through many detailed policy measures. The performance data below shows the progress and results of Hino's latest action plan, the 2020 Environment Initiative Plan.

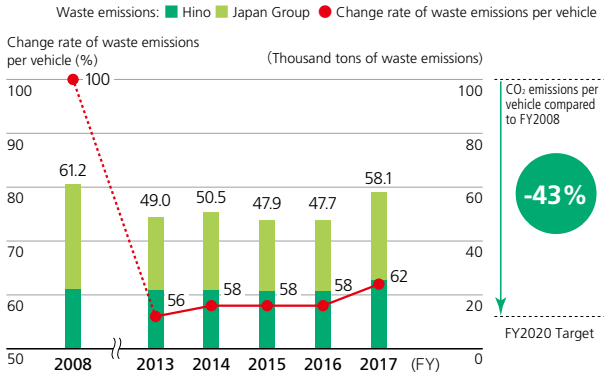
● CO_2 emissions per vehicle*1 by company and region*4



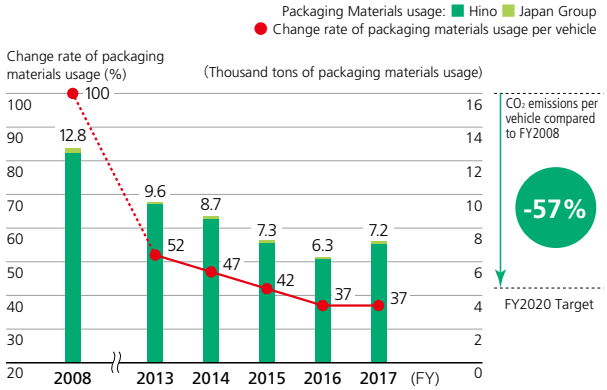
● CO_2 emissions in logistics*2 from consolidated*5 companies in Japan*5



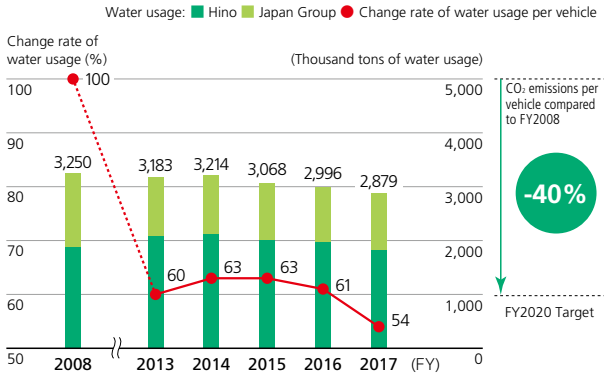
● Waste emissions*1 from consolidated companies in Japan*5



● Packaging Materials usage*3 by consolidated companies in Japan*5

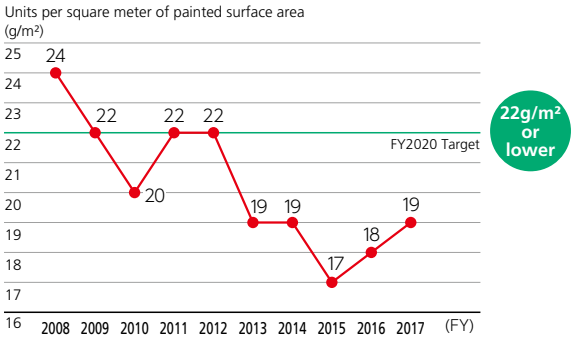


● Water usage*1 by consolidated companies in Japan*5



● Volatile organic compound (VOC) emissions from the Hino Plant and Hamura Plant

*Starting in FY2017, figures include the Koga Plant



Note: Last year's figures have been corrected to improve accuracy.
*1 Unit: Per vehicle *2 Unit: Per volume transported *3 Unit: Per unit of shipment volume *4 Global: Hino (Four plants: Hino, Hamura, Nitta, and Koga), six domestic affiliated companies and nine overseas affiliated companies. *5 Consolidated companies in Japan (Four plants: Hino, Hamura, Nitta, and Koga), six domestic affiliated companies