

Hino Environmental Challenge 2050

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

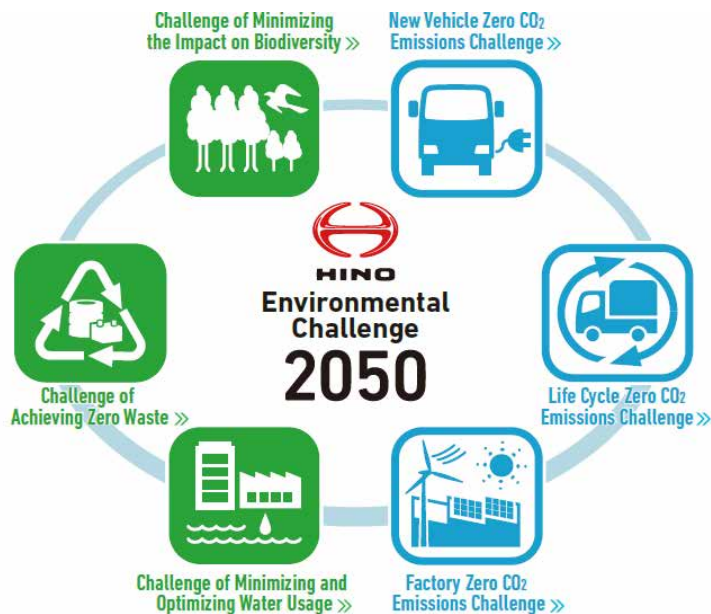
Basic Stance

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.

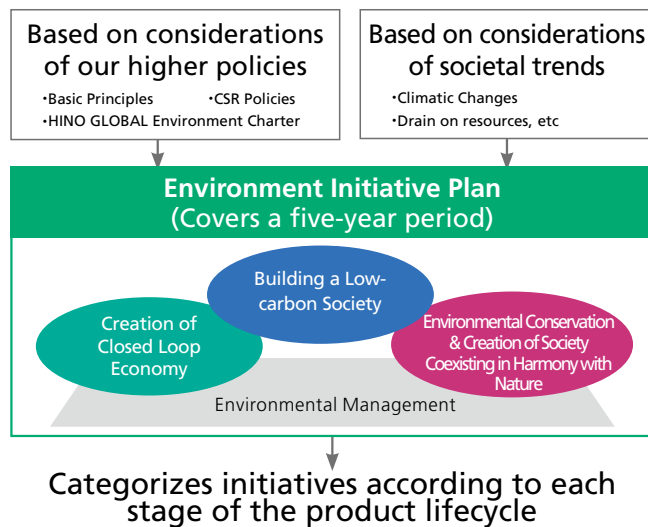
Although the established goals are very high, the Hino Group will work as one to revolutionize logistics through technical innovation of products, manufacturing innovation at production sites, and IoT technologies. As an environmental frontrunner, the Group will take on the challenge of becoming an environmentally 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	<ul style="list-style-type: none"> ● Improve CO₂ 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	<ul style="list-style-type: none"> ● Make transportation more efficient and reduce CO₂ emissions in logistics ● Work to reduce CO₂ emissions in sales activities
CHALLENGE! 3 Factory Zero CO ₂ Emissions Challenge	<ul style="list-style-type: none"> ● Work to reduce CO₂ emissions in production activities
CHALLENGE! 4 Challenge of Minimizing and Optimizing Water Usage	<ul style="list-style-type: none"> ● Work to reduce water usage in production activities
CHALLENGE! 5 Challenge of Achieving Zero Waste	<ul style="list-style-type: none"> ● 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	<ul style="list-style-type: none"> ● 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

Environment Charter > Hino Environmental Challenge 2050 CHALLENGE! 1 CHALLENGE! 2 CHALLENGE! 3 CHALLENGE! 4
CHALLENGE! 5 CHALLENGE! 6 Key Performance Data Environmental Management Material Balance

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



New Vehicle Zero CO₂ Emissions Challenge



Life Cycle Zero CO₂ Emissions Challenge



Factory Zero CO₂ Emissions Challenge

Field	Item	Specific Action Items/Targets, etc.	Fiscal 2019 Achievements and Challenges for the future
Product development	Improve CO₂ emissions and fuel consumption performance of vehicles	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Hino Motor Launches "Hino Profia Hybrid" Heavy-duty Hybrid Truck. The truck is equipped with the world's first hybrid system with AI that offers fuel efficiency in vehicles that are mainly driven at high speeds. We also offer the Hino Procia COOL Hybrid, an electric refrigeration truck with both excellent refrigeration and environmental performance. We also released the "HINO Blue Ribbon Hybrid Bus," tailoring the vehicle's size to Japan's road conditions while ensuring fuel efficiency with a hybrid system.
	Promote the development of vehicles that run on clean energy	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Operated the Toyota FC Bus, jointly developed with Toyota Motor Corporation, including bus routes operated by the Tokyo Metropolitan Government Bureau of Transportation.
Production and logistics	Initiatives for reducing CO₂ emissions in production activities	<ul style="list-style-type: none"> Carry out initiatives for reducing CO₂ emissions on both a total and per-vehicle basis by introduce low-CO₂ production technologies, and reduce CO₂ through daily improvements Consider to exploit renewable energy and renewable energy (Targets in CO₂ 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 CO₂ 	<ul style="list-style-type: none"> Steadily promoted the following goals at the CO₂ Reduction Working Group, which was launched to achieve 2020 goals. <p>(Results) Global:</p> <ul style="list-style-type: none"> Reduced emissions per unit by 34% compared to FY2008 Consolidated Companies in Japan: Reduced emissions per unit by 33% compared to FY2008 Hino Motors, Ltd: Reduced emissions per unit by 42% compared to FY2008 Emissions of fiscal 2019 were 187 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 CO₂ emissions in logistics	<ul style="list-style-type: none"> Promote initiatives to reduce CO₂ 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 CO₂ 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 	<p>(Results) Consolidated Companies in Japan:</p> <ul style="list-style-type: none"> Reduced emissions per unit of transport volume by 27% compared to FY2008 <p>(Future Challenge) Further efforts to assess impact due to plant relocation and to promote emissions reduction activities. Overseas Operations:</p> <ul style="list-style-type: none"> Promoting reduction activities in each country
Sales and after-sales service	Initiatives for reducing CO₂ emissions in sales activities	<ul style="list-style-type: none"> Create and execute plan to reduce energy consumption per unit by at least 1% per year at Japanese sales offices Assist customers in reducing CO₂ emissions 	<ul style="list-style-type: none"> Achieved reductions by installing energy-saving lighting, etc. Decreased energy consumption rate per unit by 9.1% compared to FY2015

Environment Charter > Hino Environmental Challenge 2050 CHALLENGE! 1 CHALLENGE! 2 CHALLENGE! 3 CHALLENGE! 4
CHALLENGE! 5 CHALLENGE! 6 Key Performance Data Environmental Management Material Balance

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 2019 Achievements and Challenges for the future
Product development	Develop technologies that enable elimination of the use of scarce resources	<ul style="list-style-type: none"> Reduce the amount of precious metals used in exhaust-cutting catalytic converters 	<ul style="list-style-type: none"> Excavated precious metal substitutes for gas emission reduction catalysts
	Develop new vehicles with a higher ratio of recyclable components	<ul style="list-style-type: none"> Initiatives to create assembled structures that are easy to disassemble 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 <p>(Targets in Waste Reduction for FY 2020) Consolidated Companies in Japan</p> <ul style="list-style-type: none"> 43% reduction of amount of waste generated per unit compared to FY 2008 Zero for final disposal amount* <p>Overseas Operations</p> <ul style="list-style-type: none"> Management of the amount of waste reduction <p>*Definition of Zero: Landfill amount including ash after incineration is not more than 0.5% compared with total waste including recyclable waste</p>	<p>(Results)</p> <p>Consolidated Companies in Japan</p> <ul style="list-style-type: none"> Reduced amount of waste generated per unit by 38% compared to FY2008 Achieved a final disposal rate of 0.11% Improving Emissions per Unit with Aggressive Waste Reduction Activities.. <p>We will continue reducing activities through each conference</p> <p>Overseas operations</p> <ul style="list-style-type: none"> Set targets for waste matter in each country and proceeded to make reductions
	Initiatives for reducing water usage in production activities	<ul style="list-style-type: none"> 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 <p>(Targets in Water Usage Reduction for FY 2020) Consolidated Companies in Japan</p> <p>40% reduction of water usage per unit compared to FY 2008</p> <p>Overseas Operations</p> <ul style="list-style-type: none"> Management of water usage reduction 	<p>(Results)</p> <p>Consolidated Companies in Japan</p> <ul style="list-style-type: none"> Reduced water usage per unit by 48% compared to FY2008 <p>Further water-saving equipment to be installed and recycling promoted</p> <p>Overseas operations</p> <ul style="list-style-type: none"> Set targets in each country and proceeded to make reductions
	Initiatives for reducing usage of packaging materials and use resources effectively	<ul style="list-style-type: none"> 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 <p>(Targets in Packaging Materials Usage Reduction for FY 2020) Consolidated Companies in Japan</p> <ul style="list-style-type: none"> 57% reduction of shipment volume per unit compared to FY 2008 <p>Overseas Operations</p> <ul style="list-style-type: none"> Calculate the amount of packaging materials used and expand activities to reduce them 	<p>(Results)</p> <p>Consolidated Companies in Japan</p> <ul style="list-style-type: none"> Reduced amount of packaging materials used per unit of shipment volume by 70% compared to FY2008 <p>(Future Challenge)</p> <p>Continue to pursue efforts to reduce emissions</p> <p>Overseas operations</p> <ul style="list-style-type: none"> 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 2019 Achievements and Challenges for the future
Product development	Reduce gas emissions to help improve urban air quality in each country and region	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • We improved the Hino Dutor light-duty truck and released a model compatible with Japan's stringent 2016 exhaust emission regulations. • Hino Motors Releases th Improved "Hino Liesse II "Small Bus. To further eliminate gas emissions, we have adopted a gas emissions post-processing system to remove PM nd NOx that cause air pollution.
	Further reduce the use of environmentally harmful materials	<ul style="list-style-type: none"> • Collect and manage information on increasing regulations in each country where the Group operates, and take the lead in switching to alternative materials 	<ul style="list-style-type: none"> • We collected information on chemical substances contained in parts to quickly address the growing number of regulated substances. We also enhanced and promoted our internal system ofr chemical substance management.
Production and logistics	Reduce substances that impact the environment in production activities (VOC)	<ul style="list-style-type: none"> • 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 	<p>(Results)</p> <p>Hino Motors, Inc.</p> <ul style="list-style-type: none"> • Achieved 15 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. <p>Overseas Operations</p> <ul style="list-style-type: none"> • Conducted research analysis to identify the cause of VOC volume change using constant volume and the trend management method • Implemented initiatives to reduce VOC emissions, such as collecting cleaning thinner
Social contribution	Implement biodiversity preservation activities locally at factories in every region where the Group operates	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Implemented initiatives that take the surrounding ecosystem into account in each country and region Japan • Held lectures introducing biodiversity (Hamura Plant) • Cleared weeds in Ome City (Head Office) • Cleared weeds using goats (Koga Plant) Pakistan • Planted trees together with local communities USA • Cleaned the banks of the Ohio River <p>Going forward, we will spread awareness of the guidelines in the company and promote related activities.</p>

2020 Environment Initiative Plan **Environmental Management**

Field	Item	Specific Action Items/Targets, etc.	Fiscal 2019 Achievements and Challenges for the future
Management	Strengthen and promote group environmental management	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 capabilities
	Promote environmental activities in collaboration with business partners (Our suppliers)	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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 distributors)	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Consolidated subsidiaries in Japan Implemented environmental activities at 223 dealers across Japan to facilitate related improvements and upgrades Certified two more dealers as Eco-Management Dealers, bringing the total to 223 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	<ul style="list-style-type: none"> Systematically implement environmental education Awareness training programs for every employee 	<ul style="list-style-type: none"> Implemented the following initiatives Conducted ISO internal environmental audit education President delivered a message for environmental month (June) <p>The Company will continue actively taking initiatives to improve the environment, including planning events featuring employee participation.</p>
	Actively disclose environmental information and enhance communication	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> At the Automotive Engineering Exposition 2019 "People and Automotive Technology" exhibition (held in Yokohama and Nagoya), technological development endeavors related to advanced technology and total support were introduced, including the latest safety and environmental technologies. Exhibited hybrid units for heavy-duty hybrid trucks at the Powertrains, Fuels and Lubricants Meeting (held in Kyoto) sponsored by SAE and introduced "best-fit products incorporating environmental technology."