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.

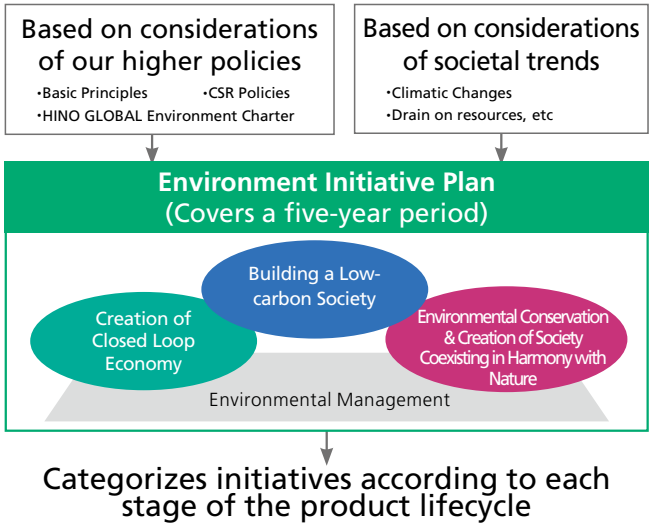
Although the established goals are very high, the Hino Group will work as one to revolutionize logistics through technical innovation of products, manufacturing innovation at production sites, and IoT technologies. As an environmental frontrunner, the Group will take on the challenge of becoming an environmentally 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 2018 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 34% compared to FY2008 Consolidated Companies in Japan: ・Reduced emissions per unit by 32% compared to FY2008 Hino Motors, Ltd: ・Reduced emissions per unit by 42% compared to FY2008 ・Emissions of fiscal 2018 were 211 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 27% 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 energy-saving lighting, etc. Decreased energy consumption rate per unit by 5.6% compared to FY2015

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 2018 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	(Results) Consolidated Companies in Japan ・Reduced amount of waste generated per unit by 36% compared to FY2008 ・Achieved a final disposal rate of 0.07% ・Output level worsened due to an imbalance between the quantity of waste generated and production volume, which was impacted by changes in the valuable resources trade market and a fire at a Group company plant. 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 47% 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 70% compared to FY2008 (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 2018 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)	•The heavy-duty truck Hino Profia tractor series underwent a model change to align it with fiscal 2016 gas emission regulations.
	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 17 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 ・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**	•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	•Implemented initiatives that take the surrounding ecosystem into account in each country and region Japan ・Held exhibits/lectures introducing biodiversity (Head Office, 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 Going forward, we will spread awareness of the guidelines in the company and promote related activities.

2020 Environment Initiative Plan **Environmental Management**

Field	Item	Specific Action Items/Targets, etc.	Fiscal 2018 Achievements and Challenges for the future
Management	**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 223 dealers across Japan to facilitate related improvements and upgrades ・Certified two more dealers as Eco-Management Dealers, bringing the total to 222 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) 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	•At the Automotive Engineering Exposition 2018 "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. •Hino's environmental initiatives were presented at EVS31 (International Electric Vehicle Symposium), which was sponsored by the Japan Automobile Research Institute.