

CHALLENGE! 2 Life Cycle Zero CO₂ Emissions

TARGET Vehicle Life Cycle –from manufacturing to disposal-
Zero CO₂ Emissions



The Hino Group emits CO₂ 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 CO₂ emissions in these fields.




At Materials manufacturing stage, reduce CO₂ emissions thoroughly



Hino Motors will reduce the amount of materials used and the number of parts to reduce CO₂ at the time of material manufacturing. The Company will select materials that reduce CO₂ emissions in the product development stage, such as by actively promoting the development of plastic parts to reduce CO₂ emissions during parts manufacturing.




At the Distribution stage, reduce CO₂ emissions thoroughly




The Company will thoroughly reduce CO₂ 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 CO₂ emissions thoroughly



Hino Motors will proactively introduce materials including biomaterials and recycled materials that help reduce CO₂ 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 Management Material Balance Hino Environmental Challenge 2050

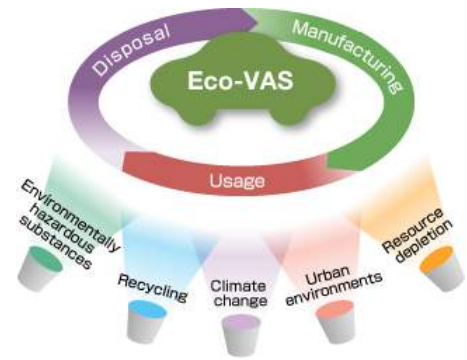
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Environmental Load Reduction Activities Based on Life Cycle Assessment (LCA)

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.

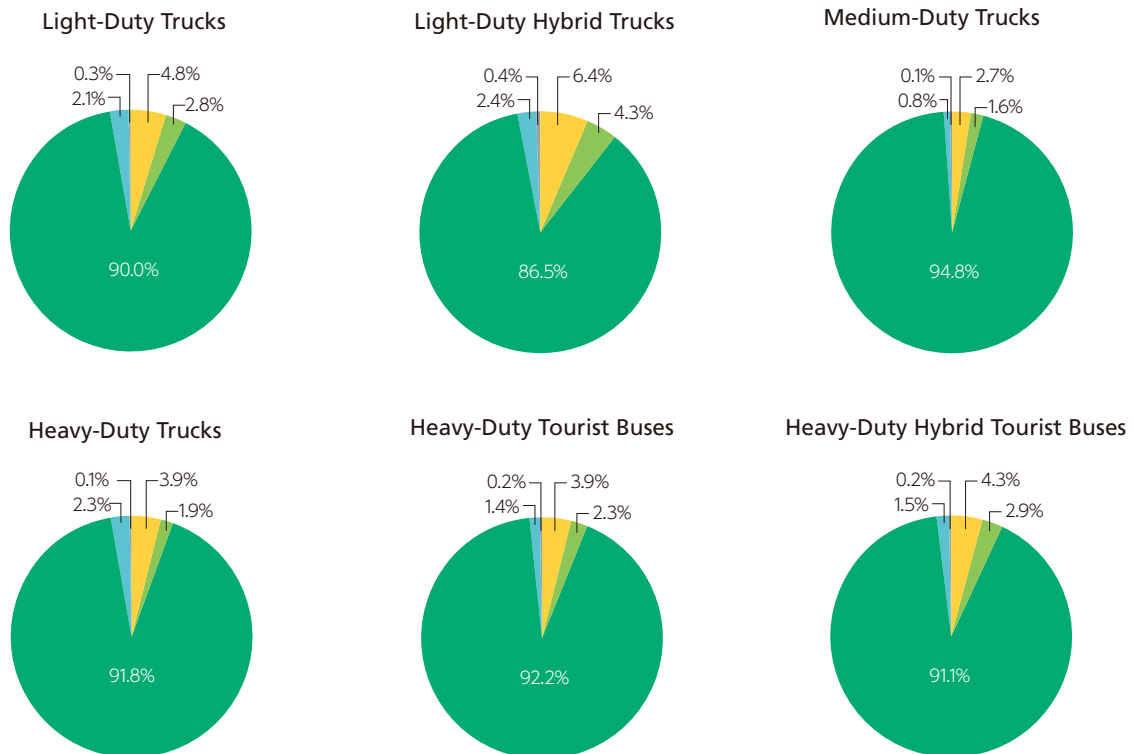


◆ LCA Initiative

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 CO₂ 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 CO₂ of each model

Producing raw materials Manufacturing vehicles During driving
During maintenance At disposal



*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 CO₂ Emissions in Distribution Operations

Logistics

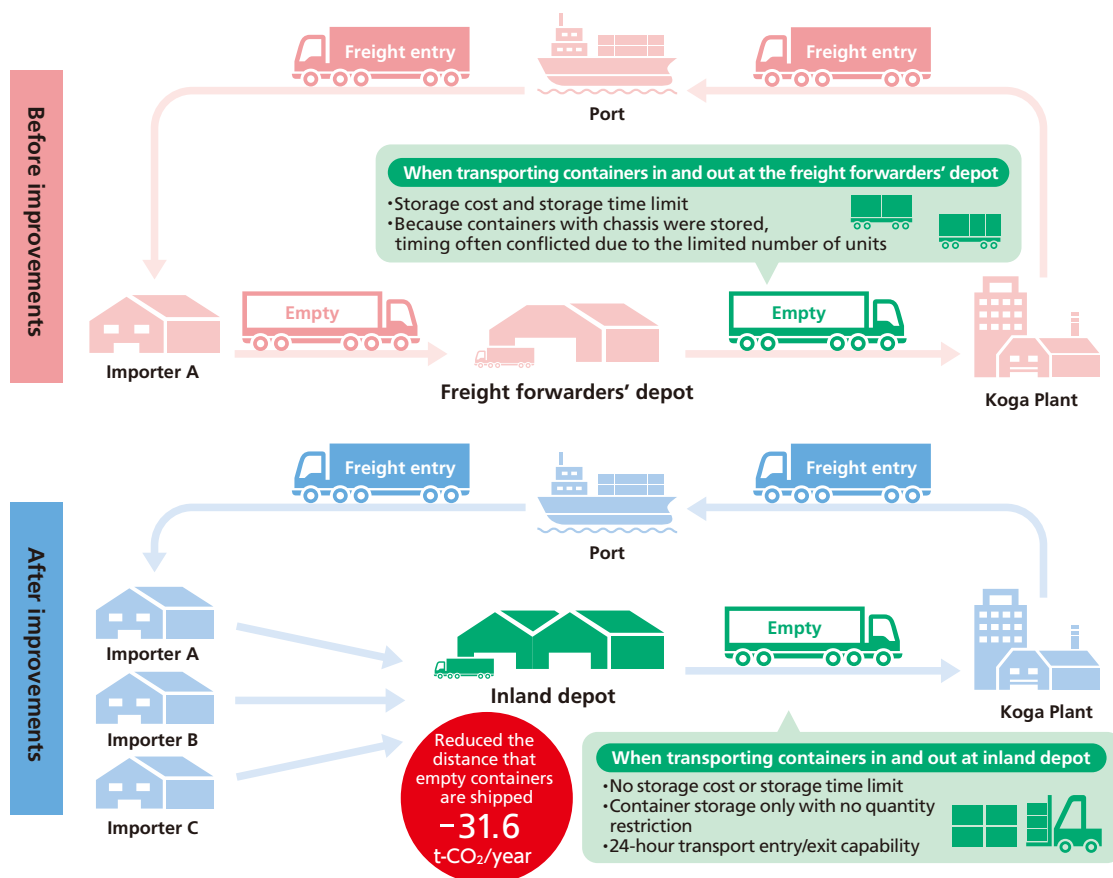
◆ Initiatives to reduce CO₂ emissions from distribution

Under the guidance of the Logistics Improvement Council, Hino Motors is carrying out the following initiatives aimed at reducing CO₂ 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

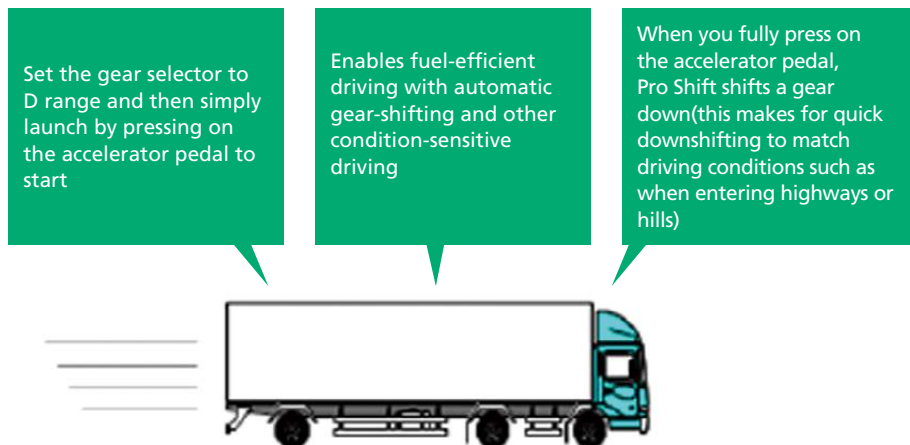
Hino Motors will continue to support customers' eco-driving capacities as it strives to remain a company trusted worldwide.

◆ 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

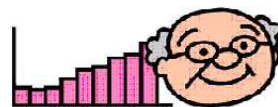
Propose improvements based on Hino Eco Tree Report utilization



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 CO₂ emissions



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

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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 CO₂ emissions along its entire supply chain, while also focusing on CO₂ 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.Processing 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%

