Trucks for life

ISUZU

ISUZU MOTORS LIMITED

Environmental & Social Report 2006

As a Reliable Partner, Isuzu is Committed to Ensure the Effective Utilization of Our Limited Recourses.

Improving Fuel Efficiency is a Mission Imposed on Automobile Manufacturers

Reducing environmental impacts is one of the top priority issues for Isuzu Motors, whose major business consists of commercial vehicles and diesel engines. In recent years, the rise in crude oil prices was a trigger that highlighted the theme of "how to best utilize our resources" in countries all over the world—including developing nations. Global resources are limited. We cannot, however, think of leading more contented lives without using resources. Thus, effective utilization of resources is one of the most critical issues to all human beings.

Diesel engines are superior to gasoline engines in thermal efficiency and have 20 to 40 percent lower CO_2 (carbon dioxide) emissions. Isuzu has managed to decrease fuel consumption by about 40% in the past decade through the continuous improvement of its engines and vehicles. We are thus actively contributing to the conservation of resources and the prevention of global warming.

Isuzu will keep doing our best to develop better diesel engines to provide fuel efficient commercial vehicles—we are sure this will help promote effective utilization of resources and contribute to the economic growth of both developing and developed countries.

Aspiring to be a Leading Global Company, Both Environmentally and Socially

As its corporate vision, Isuzu's determination to become a "Leading Global Company in commercial vehicles and diesel engines" is reflected in its mid-term business plan, The Leading Global Company, which means not only to establish competitiveness in business but also to be a leading company in contributing to the environment and society.

Diesel engines have many excellent advantages, but there is still much room for improvement in their performance and environmental aspects. A part of Isuzu's social responsibilities is to be a forerunner in the fields of commercial vehicles and diesel engines. We are striving to assume our mission as a pioneer in diesel engine engineering.

With this determination, we did not cut costs in research and development in the above areas, even when our financial condition deteriorated a few years ago. Such an effort resulted in excellent products such as the ELF CNG-MPI light-duty truck, the FORWARD, medium-duty truck, and the GIGA heavy-duty truck, all of which have complied with the new long-term emission standards. The "ELF HYBRID." the low-pollution truck, is another fruit of our state-of the art technology.

Building a Good Relationship with All Stakeholders

In order for us to be a Leading Global Company, it is also important for us to build a better relationship with all the stakeholders by responding to their expectations and making ourselves fully understood by them. Stakeholders, however, include a variety of people such as customers, suppliers, shareholders, employees, and residents in local communities. Therefore, their expectations of Isuzu are not always the same.

To be able to respond to the various demands of stakeholders and maintain a good relationship with them, Isuzu has to keep on growing by making appropriate profits as a company, because stable management is the very basis for us to comply with the demands of our stakeholders.

At the same time, each staff member must discipline himself/herself as a business citizen who is also a member of society. It is therefore important to promote compliance thoroughly within the company. I always say to staff members, "Never make profits in an anti-society manner." Every staff member must be aware of all aspects of compliance and assume their social responsibilities, in order to enhance our corporate value. This will lead us to becoming a true Leading Global Company.

I will continue to present Isuzu's strategy for further growth and assume accountability so as to make Isuzu fully accepted and appreciated by all stakeholders.

Contributing to a Sustainable Society through Environmentally Friendly Next-Generation Vehicles

Isuzu is to release fully changed new-generation trucks to its customers. Currently, we are selling trucks in well over a hundred countries around the world, and overseas sales account for about 60% of our total sales. We have so far been doing business in overseas markets by manufacturing vehicles with overseas specifications that are based on the domestic vehicles. However, our next-generation trucks have been developed originally for global markets. I have declared that we will not release these trucks until they reach the level where all staff members involved in production, sales, servicing —as well as development—can be fully assured that the trucks will enjoy wide acceptance in markets around the world. Trucks that are full of surprises and that far exceed the level of expected improvement! Also, I am sure these next-generation vehicles will even change Isuzu's culture of vehicle production.

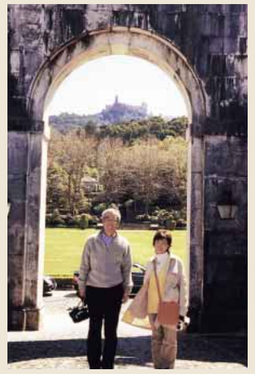
Diesel-powered commercial vehicles made by Isuzu serve as a tool that people cannot do without in their lives, and they should be able to keep on running 24 hours-a-day, 365 days-a-year, whatever the climate and road conditions. Accordingly, sufficient consideration and measures are required with regards to environmental impact. I am confident that our next-generation products—incorporating big surprises in the environmental aspects—will be welcomed by all our customers.

As a Leading Global Company manufacturing commercial vehicles and diesel engines, Isuzu is committed to be a corporation that can make a long-term contribution to society by providing customers all over the world with products that are superior in every aspect, such as environmental and safety and, of course, in their performance.

Yoshinori Ida
President and Representative Director
Isuzu Motors Ltd.

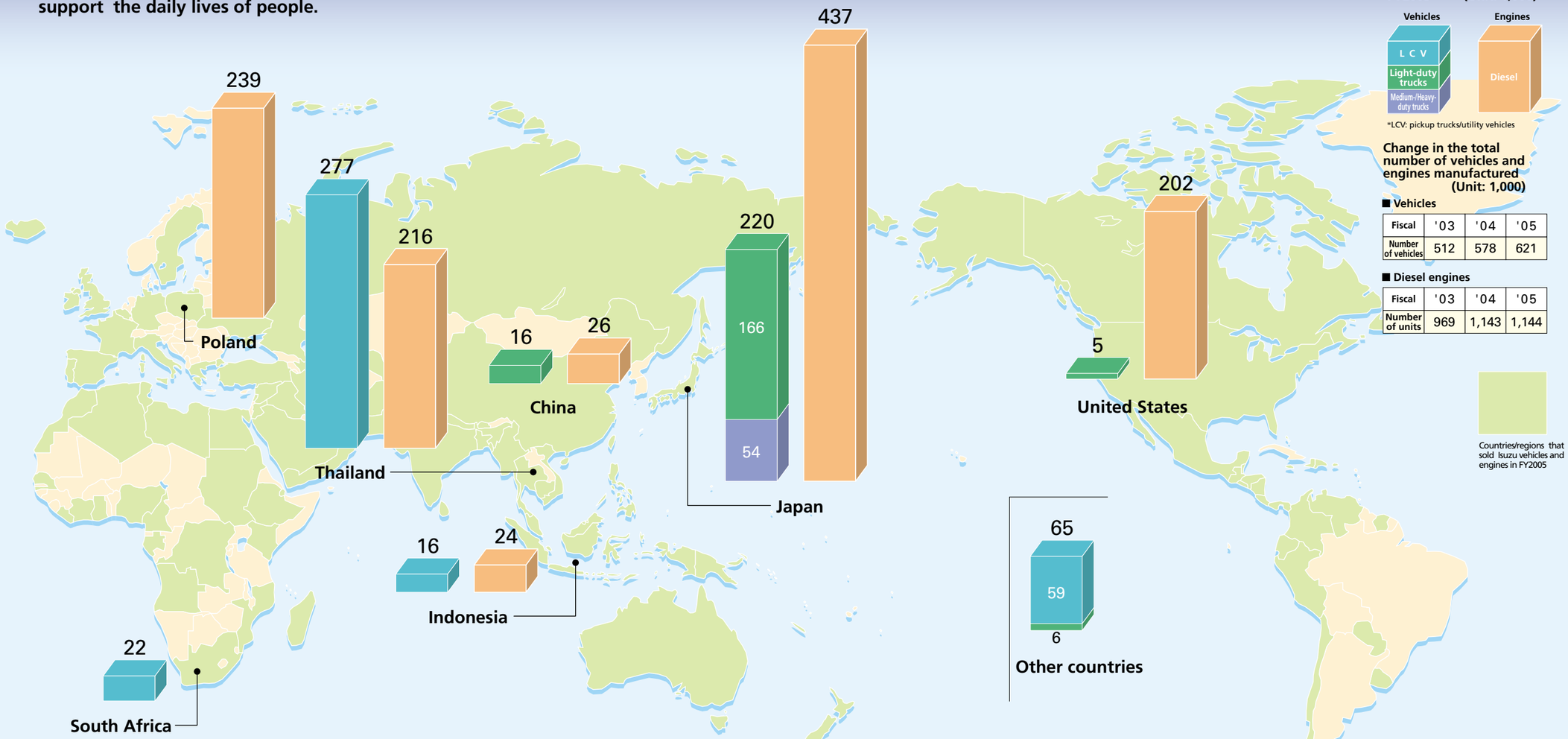
Ecolife

Thirty kilometers west of Lisbon, Portugal. Looking at the hilltop Pena Palace from the archway of the Hotel Tivoli Palacio De Seteais (Palace of Seven Sighs) in the suburbs of Sintra, whose cultural scenery is registered as a World Heritage Site. I enjoyed the glorious views and keenly felt that we must preserve such nature and environment for future generations.



Outline of Isuzu

Our vehicles and engines are manufactured and sold in countries around the world to support the daily lives of people.



Number of vehicles and engines manufactured in FY2005 (Unit: 1,000)

*LCV: pickup trucks/utility vehicles

Change in the total number of vehicles and engines manufactured (Unit: 1,000)

■ Vehicles

Fiscal	'03	'04	'05
Number of vehicles	512	578	621

■ Diesel engines

Fiscal	'03	'04	'05
Number of units	969	1,143	1,144

Countries/regions that sold Isuzu vehicles and engines in FY2005

Products


4EE2 engine


6DE1 engine


8GF1 engine


D-MAX

ELF

FORWARD

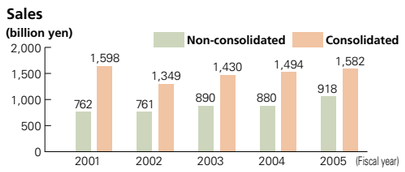

GIGA

ERGA

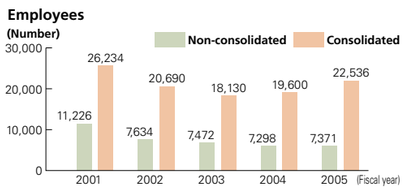
■ Corporate Facts

Company name:	Isuzu Motors Limited
President and Representative Director:	Yoshinori Ida
Headquarters:	6-26-1 Minami-oi, Shinagawa-ku, Tokyo 140-8722, Japan
Established:	April 9, 1937
Capital:	¥40.6 billion (as of March 31, 2006)
Business operations:	Manufacture, sales and service of motor vehicles, transport machinery and tools, engines and related parts and materials
Sales:	Non-consolidated, ¥917.9 billion; Consolidated, ¥1,581.9 billion (for the period ending March 2006)
Ordinary profit:	Non-consolidated, ¥64.1 billion; Consolidated, ¥93.8 billion (for the period ending March 2006)
Vehicle sales:	219,908 (99,231 sold in Japan, 120,677 exported) (for the period ending March 2006)
Main products:	Heavy-, medium-, light-duty trucks, pickup trucks, utility vehicles, buses, engines and components
Number of employees:	Non-consolidated, 7,371; Consolidated, 22,536 (as of March 31, 2006)
Offices and plants:	Headquarters, Fujisawa Plant, Tochigi Plant

Sales



Employees



■ Editorial Policy

This is our eighth annual environmental and social report. The report is compiled to enable all readers to understand easily how we are working to create a sustainable society. We also aimed at improving the social aspect of the report, in addition to the environmental aspect. The Japan Ministry of the Environment's Environmental Reporting Guidelines and GRI's* Sustainability Reporting Guidelines were followed as references in the process of publishing this report. We would appreciate your comments via the enclosed questionnaire.

*GRI: The Global Reporting Initiative is an international organization that has the goal of establishing guidelines for environmental, social, and economic sustainability reporting for use worldwide.

■ Scope of the Report

This report primarily covers Isuzu Motors Ltd.'s environmental activities but also includes domestic and overseas group activities.

■ Period Covered

This report includes data from fiscal 2005 (April 1, 2005 to March 31, 2006) and also features some recent activities.

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Corporate Vision

Isuzu is contributing to society by offering what no other company can, and by delivering quality products and service.

Corporate Vision

Isuzu will always mean the best

A leader in transportation,commercial vehicles and diesel engines, supporting our customers and respecting the environment

Isuzu was founded in 1916 as one of the first automobile manufacturers in Japan. Since its establishment, it has devoted itself totally to the development and production of commercial vehicles and diesel engines, thus contributing to a better lifestyle by delivering the advanced and high quality products. Various Isuzu products have been receiving good reputation, not only in Japan but also overseas, and are now being marketed in well over one hundred countries. Excellent safety, economy, environmental performance and high-quality service are common requirements from around the world. In order to meet these requirements, we take our Corporate Vision as the ultimate goal, and proceed with product development on a global basis, with a production system that assures consistent quality world-wide, and state-of-the-art customer support.

Our mission is to incessantly support transportation and mobility all over the world. We hope to be a company that is relied upon and widely accepted by people around the world through our sincerity toward manufacturing.

Corporate Mission

Trust, Action, Excellence

A global team delivering inspired products and services committed to exceeding expectations

Along with its corporate vision, Isuzu is determined to become: "A Leading Global Company in commercial vehicles and diesel engines." This is its management vision in the mid-term business plan. Our goal is to become a leading global company, not only in the financial sense, but also in the aspects of environmental and social relations. Thus, the Corporate Mission was developed to show how each employee should act in order to achieve this goal. Each employee, as a corporate individual and also a corporate citizen, should be relied upon by various stakeholders. Even the toughest or unsolvable questions and tasks in the areas of products, individuality and organization can be conquered if each employee makes the most of his/her ability and combines it with those of other Isuzu associates around the world. With such combined power, we are committed to improving corporate values and preserving the global environment.

Corporate Governance

Isuzu makes much of corporate governance and improves its structure to ensure soundness, compliance and transparency of management.

Basic Concept

In order for Isuzu to continuously make profits from its corporate activities and to enhance its corporate values, it is essential to complete the corporate governance structure that disciplines its activities.

Furthermore, the principal aim of our corporate governance is to respect the viewpoints of all stakeholders and construct a good relationship with them—for example, to protect their rights and interests and to secure equality among them.

For that purpose, we are striving to improve our corporate governance structure with a view to realizing optimum and prompt business determination, as well as effective management and re-enforced supervision of business operations. At the same time, we are working on timely and appropriate disclosure of critical information, including the release of financial information on our website, so as to ensure fairness of and transparency.

Our Corporate Governance Structure

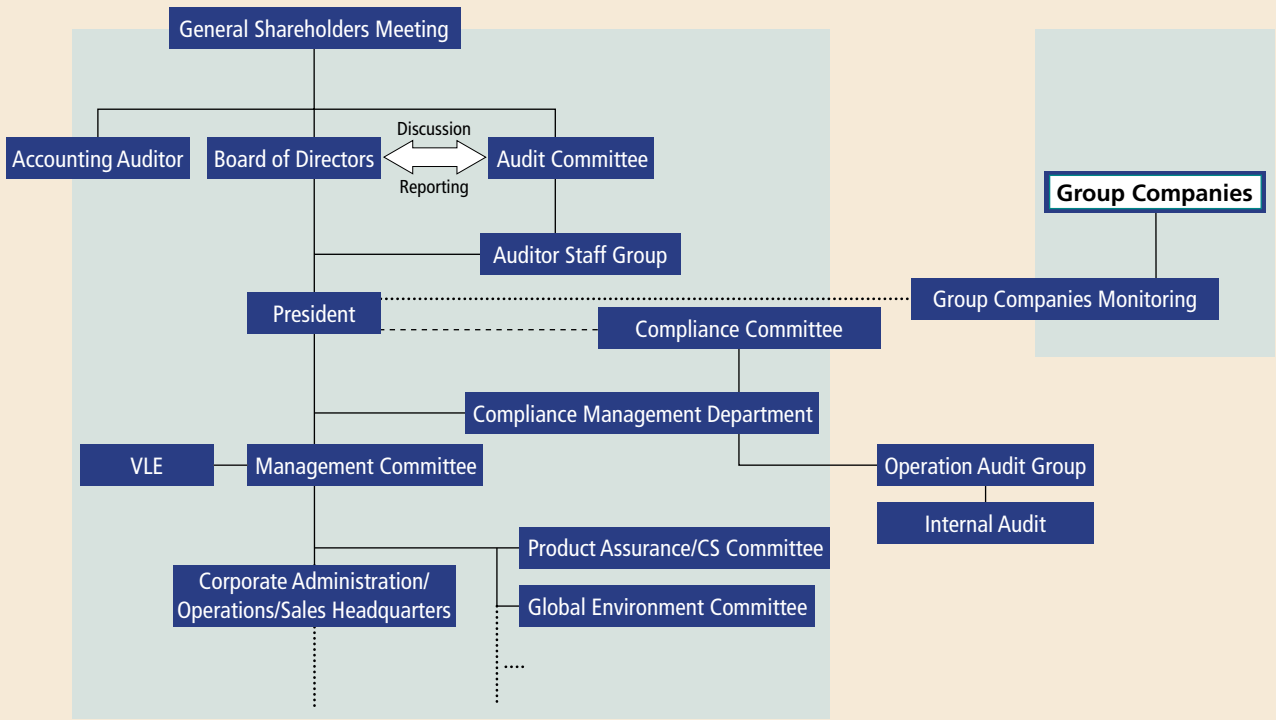
In order to speed up managerial decision-making and business operations, Isuzu has set up a Management Committee that examines and decides on critical matters for corporate management, based on resolutions of the Board of Directors. In addition, we have introduced an executive officer system for properly supporting our directors' business operations.

Additionally, the VLE (Vehicle Line Executive/ Powertrain Executive) system has been introduced for ensuring inter-departmental activities maximize profits by product-line.

Meanwhile, external auditors monitor our activities so we can be sure our management supervision is functioning properly.

Furthermore, in order to secure proper operations, we are promoting a compliance campaign, primarily led by the Compliance Committee, which encourages all directors and employees to base their actions on a high morality to gain society's trust, while complying with laws and regulations.

Chart of Corporate Governance Structure



Efforts toward Compliance

Isuzu regards compliance as of crucial importance in order to raise corporate values, based on our corporate vision. We have thus developed and have been implementing our Basic Compliance Initiative.

The Basic Compliance Initiative

Our corporate vision is: *Isuzu will always mean the best: A leader in transportation, commercial vehicles and diesel engines, supporting our customers and respecting the environment.*

In order to maintain high corporate values and fulfill this vision, it is absolutely crucial to maintain a high work ethic, not only to ensure compliance, but also for all of our executives and employees to conduct themselves in accordance with the highest values, so that we engender trust from society.

With absolute compliance as our highest management priority, we have created a Basic Compliance Initiative for both internal and external purpose. Our management regards leading employees in accordance with the plan to be its responsibility. Should any violations occur, management is committed to resolving these issues and investigating their causes, in order to ensure that they do not recur. Management is also responsible for providing prompt and appropriate public disclosure and accountability.

1. Gaining Customers' Trust
We will gain our customers' trust by providing socially valuable products and services that enrich their lives.

2. Fair and Sound Activities
We will conduct business in the spirit of free and fair competition. Further, as private citizens committed to a healthy and fair relationship with host governments, we resolve to avoid contact with any anti-social groups or organizations.

3. Disclosure of Corporate Information
We will disclose corporate information to both shareholders and the public in a timely, appropriate and fair manner.

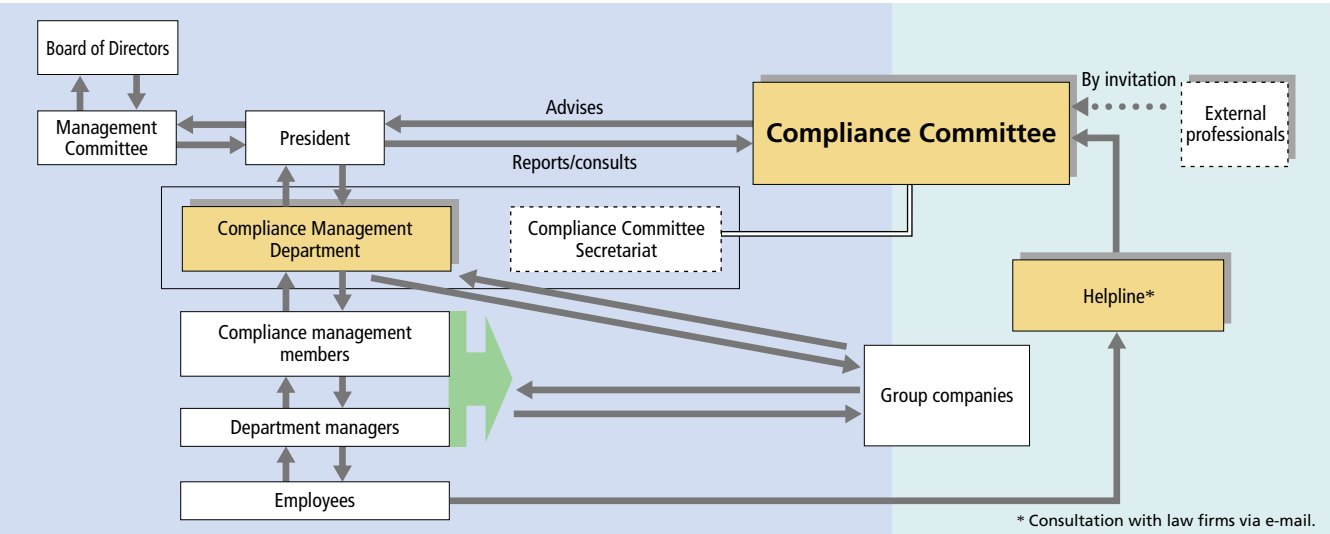
4. Respecting Employees
We will provide a safe, comfortable working environment, with respect for employees' individuality, so that they can make the most of their abilities.

5. Protecting the Environment
As global citizens, we will work to protect the environment through our business activities, while also actively promoting community and regional environmental protection.

6. Contributing to Society
As good corporate citizens, we will make a positive contribution to society.

7. Living in Harmony with the Global and Local Communities
We will respect the culture and customs of different countries and regions and work to contribute to the development of these areas through our business activities.

Isuzu's Compliance Structure



■ Activities

To cultivate compliance awareness and ensure initial motivation, workshops were held for all members of management, including directors and general managers.

In addition, the Compliance Guide Book was developed and distributed as a code of conduct, to show the basic stance and views required of all directors and managers.

Stakeholder Meeting

A stakeholder meeting with environmental professionals was held on July 3, 2006 on the theme of: *How can Isuzu contribute to a sustainable society?*

Participants

Kazunori Kobayashi
Manager, Japan for Sustainability (JFS) (NPO)

Kikuko Tatsumi
Executive Director, Nippon Association of Consumer Specialists/Executive director, Green Purchasing Network

Naoyuki Hata
Executive member of Steering Committee, Kiko Network (NPO)

Shinsuke Harai
Representative Director, HR LAB Ltd.

Fuminori Hiyoshi
Manager, General Affairs Division, General Affairs Department, Japan Coca-Cola Bottling Co., Ltd.

Risa Togo
Environmental Measures, Public Relations and Environment Department, Tokyo Coca-Cola Bottling Co., Ltd.

Isuzu Motors' participants

Shigeki Toma
Executive Vice President, Chairperson of the Global Environment Committee

Kyosuke Yokoe
General Manager, Program Management Department

Discussion on the Isuzu Environmental & Social Report 2005

Tatsumi: While there is a recent trend toward changing *Environmental Report* to *Environmental and Social Report*, and to omit descriptions of environmental issues, Isuzu emphasizes environmental aspects. I greatly appreciate Isuzu's stance as an automobile manufacturer. I suggest that readers might understand your corporate image more easily if you try to depict it more clearly in the future and show how you intend to work toward that goal.

Harai: The report tells us that Isuzu is taking environmental issues seriously, but your position and claims as a corporate body are rather modest. For example, you say that you aim to become a Leading Global Company, but I think you should emphasize what Isuzu can do for society, after it becomes such an excellent company.

Hiyoshi: I found the report interesting and good in that you clearly show the company's attitude, but I could not find much about interaction with local communities. If you are doing work in this area, you should talk about it.

Togo: I have been reading your reports since 2002 and they have improved steadily each year. For instance, I appreciate your explanations of technical terms to help readers understand them. I found that the president's "eco-life" made the company seem closer to the readers.

Hata: I would give the report a high rating in terms of global warming prevention, but I would like to see more hard facts and figures.
Kobayashi: The president says that Isuzu aims to be number one in its efforts toward the environment and society, and his eagerness is apparent. Also, the fact that the executives of the engineering and production departments talked frankly about the direction of environmental technology showed that Isuzu is an open company, but the report does not describe much about measures taken abroad.
Yokoe: We have received similar comments about the lack of overseas stories. In this issue, we started reporting overseas facts from where environmental data is easier to be complied with, such as the production bases of the Isuzu Group.
Toma: Although we are not a pioneer company in environmental terms, I thank you for your kind acceptance. We fully recognize the importance of the environmental and social report, and will continue to improve the report.

How should automobile/truck manufacturers act in order to realize a sustainable society?

Kobayashi: In Europe, the emission restriction range of CO_2 is set at national and company levels so as to indicate the range of responsibility. The scope of responsibility is clearly defined for each party. Japanese automobile manufacturers should identify the scope of their possible responsibilities like in Europe and ascertain and impress on the government responsibilities that cannot be borne by a company. Otherwise, Japanese companies cannot be strong enough.
Hata: In the case of automobiles, CO_2 is emitted in the manufacturing process and from the products in use. As the quantities emitted by the products are considerably larger, manufacturers should naturally focus on improving fuel consumption. However, it seems time to consider the whole system of transportation and truck distribution from a wider viewpoint, including public transportation and railroads.
Harai: I agree with you. As a professional of transport, Isuzu should propose ways of using trucks and buses that are desirable for the environment and society. Every employee in every company wants their company to be valuable in society. If Isuzu proposes beneficial use of trucks and buses, it will enjoy wide acceptance in society as an excellent company in Japan.
Hiyoshi: I also want automobile manufacturers to present an ideal picture of motorized society, as a social infrastructure that society will then consider.
Togo: I once participated in the Transport Strategies Seminar hosted by Isuzu and experienced fuel efficient and safe driving. Apparently, more than ten thousand people have already attended that seminar. I want Isuzu to continue with such a well-developed, educational follow-up service.
Tatsumi: In order to create a sustainable society as a truck manufacturer, I think Isuzu should make proposals for and education on eco-driving. From that viewpoint, I appreciate that *Mimamori-kun*[1] service. Essentially, drivers need to become very aware of eco-driving without such service, but currently *Mimamori-kun* means a lot. I hope Isuzu will continue developing and spreading such "software" tools, promoting green purchasing of environmentally friendly parts and products, and focusing on sustainable purchase of resources such as metals.

What we expect of Isuzu in the future

Hiyoshi: It depends how much Isuzu can contribute to society as a company. Isuzu has a lot of know-how about vehicle manufacturing and so should keep giving benefits to society by offering its accumulated knowledge for constructing better infrastructure in society.
Togo: I want Isuzu to continue making safe and environmentally friendly vehicles, which is of course an eternal theme. We need to preserve our environment and bring about a safer society by making safe vehicles.
Kobayashi: I presume you have recently heard the term *carbon-neutral*. This means that the amounts of carbon dioxide that enter and leave the atmosphere should be equal. A bank in Europe has already declared that they, including their clients, will succeed in being carbon-neutral. Isuzu, too, should take such actions, so please train your employees to be more carbon-sensitive: for instance, not to use electricity unnecessarily or let vehicles idle needlessly. *Mimamori-kun* can be a carbon-sensitive tool and so spreading the use of *Mimamori-kun* will contribute to society.
Hata: In Japan, policy recommendations are usually made by an industry, not by a single corporation. I suggest that Isuzu should present its own views and proposals on the environment and other areas. In addition, I would like Isuzu, as a truck manufacturer, to contribute to changing the entire transportation system.
Harai: Regarding compliance, a company will be blamed if it has even a single imprudent person who does not adhere to compliance. So, Isuzu needs to build solid bonds between individuals and the organization and acquire the loyalty of its employees. If you treat employees as nothing more than a part of the organization, you will be sure to find someone violating compliance rules. It is therefore necessary to rebuild the relationship with each employee to obtain their trust. I believe this will make a company healthy enough to prevent compliance violations.
Tatsumi: Communication with society and consumers is indispensable to a company. I know that Isuzu has been participating in the Eco-Products Exhibition since its first exhibit in 1999. Since such an event is a window for communicating with society and consumers, Isuzu should continue participating in this exhibition. Regarding hardware, I hope all Isuzu vehicles will be manufactured as more environmentally friendly products.
Yokoe: We will continue to be specialized in diesel engines that are superior in environmental performance. At the same time, in order to maximize the performance, we will strongly promote a hardware product called "Smoother[2]," which is the ultimate transmission for commercial vehicles. Simultaneously, we are going to strengthen our support from the software aspect, such as the promotion of *Mimamori-kun* and training on eco-driving. In this way, we are building a framework for contributing to the environment from the aspects of both hardware and software.
Toma: In order for Isuzu to make further progress, the awareness of our employees must be changed. While the employees' minds at the manufacturing site are soundly united, and thus organizing power is strong, there is an atmosphere that suppresses dissent and so the employees are obedient. I always say: *Think for yourself. Think of what is going on in the world, and you will know what you should do.* I want to encourage them to act on their own. At manufacturing sites, we are promoting "visualization" so as to point out problems due for improvement. Excellent technologies are being transferred to overseas manufacturing plants, such as in the United States and Thailand, where they are standardized to enhance our cost competitiveness, while more environmental products are being developed and improved constantly. These efforts will lead to an improved environment. To that end, we continuously encourage innovation of the awareness and continued activities of each employee.



[Responding to the meeting]

This meeting showed that our products could have better environmental performance and economic efficiency by providing customers with information about features and proper use of environmentally friendly products, not only by developing, manufacturing and selling them. In addition, our software support activities such as *Mimamori-kun* and fuel-efficient driving seminars are very effective in achieving environmental performance goals, at a higher level.

On the other hand, in order to make environmentally friendly products popular in markets in developing countries where people's environmental awareness is still low, there are many challenges to be solved, including prices and fuel conditions. Under such circumstances, Isuzu has resolved to tackle such challenges one by one from the global viewpoint of a leading company of commercial vehicles and diesel engines.

We intend to help bring about a sustainable social environment while taking stakeholders' opinions into consideration. We would appreciate your kind support.

(Toma/Yokoe)

1 *Mimamori-kun*: An advanced vehicle diagnostic and information system that analyzes driving data, provides advice for reducing fuel consumption and gives tips on safe driving. It received the Land Infrastructure and Transport Minister's Award at the 2nd Eco Products Award in December 2005. (see p. 29–p. 30)
2 "Smoother": Manual transmission with an automatic gear shifting function (see p. 25)

Isuzu's Challenge toward Stopping Global Warming

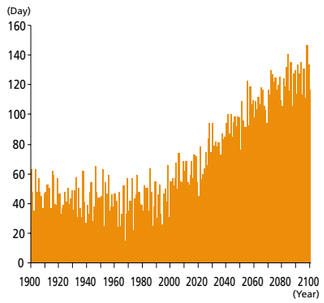
Aiming at becoming a Leading Global Company, also in environmental preservation, the Isuzu Group as a whole is endeavoring to stop global warming.

The Global Climate is Becoming Abnormal!

Floods, giant typhoons, great droughts, and other, global warming effects are on the rise. Reducing CO_2 (carbon dioxide), which is considered to be the principal source of global warming, is now an urgent global issue.
CO_2 is emitted everywhere in our daily lives and industries—at home, in offices and in factory plants. If the emissions continue to increase at the current rate, global warming will become more critical and will reach an irrecoverable level in due course.
Prevention of global warming is now an issue that cannot wait.


Hurricane Katrina approaching Florida (August 29, 2005)

◆Forecast of the number of hot days (30°C and higher) in Japan in the period from 1900 to 2100



In 2100, hot days are expected to last for over four months during Japanese summers, which will cause frequent heavy rain is expected as a result.
(Source: Web page of the Center for Climate System Research, the University of Tokyo).

■ Rise in the Water Level

As much as 1,620m³ (about four times the volume of the water in a 25m swimming pool) of glaciers are said to be melting per second in Greenland today. If glaciers continue to melt at this rate, it is expected that the sea level will rise 9–88 centimeters in one hundred years and low elevation islands such as Tubal and Fiji will almost be submerged. If the sea level rises by one meter around Japan, the entire area of Eastern Tokyo and Northwestern Osaka might become submerged.


Melt-water pouring down from the edge of glaciers (Nordaustlandet Glaciers, Svalbard Islands, the Arctic Ocean)

■ Great Floods Occur more Frequently around the World

Katrina: a giant hurricane struck in 2005. The city of New Orleans, USA was hit directly and was turned into mud water overnight. Typhoons struck Japan in succession in the same year, causing floods across the country. If global warming continues, more hurricanes and typhoons will be outrageous, causing significant water damage all over the world.


City of New Orleans hit by flood

■ Fear of Infection Spreads around the World

Epidemic creatures in tropical regions are often found in Japan today. Due to global warming, mosquitoes and other insects that transmit tropical infectious diseases such as malaria, yellow fever and dengue fever are spreading to areas other than tropical regions. Thus, fear of infections is expanding around the world.


Dengue mosquito

The Isuzu Group is United to Prevent Global Warming

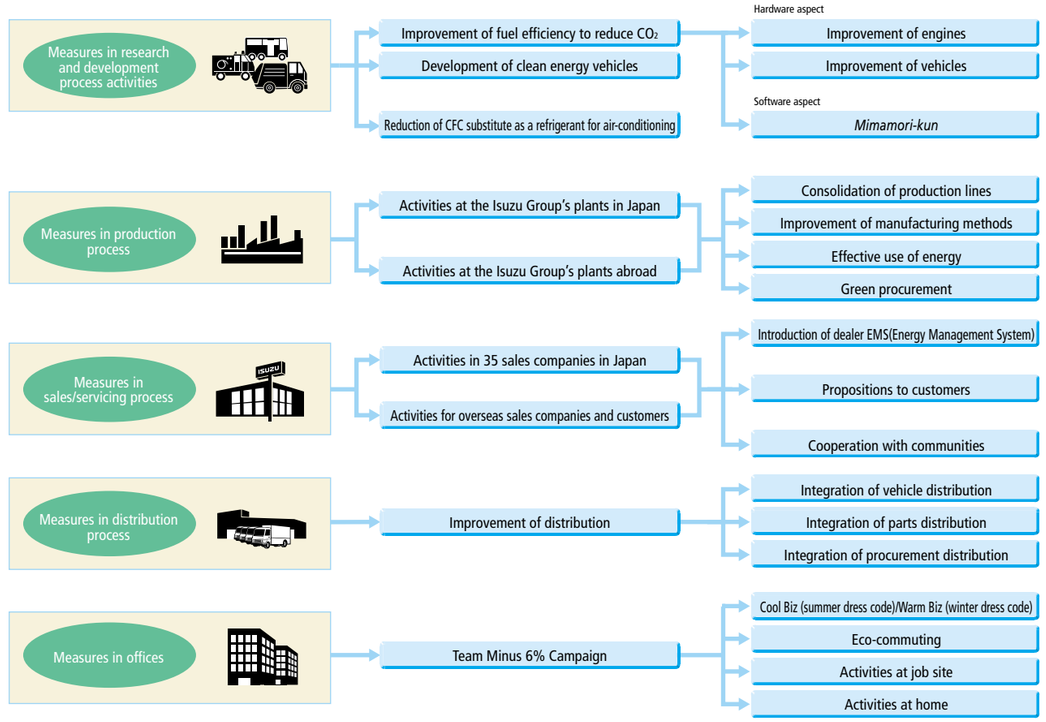
Isuzu Group aims at being a Leading Global Company also in environmental conservation and conducts environmental conservation campaigns, which is an eternally important issue to be passed on to the next generation. As our business is directly connected to environmental conservation, we are proud of helping to conserve the global environment by improving commercial vehicles and diesel engines.

With regard to global warming, which is a most critical issue today, we are implementing various activities to stop it, such as improvement of fuel efficiency of engines and vehicles; energy saving in manufacturing and distribution processes; eco-driving training in the use process; Team Minus 6% activity* and individual grassroots activities. Small efforts by individual employees are essential for environmental conservation. The Isuzu Group regards environmental conservation for each employee and is striving to hand over this beautiful earth to the next generation.

* Team Minus 6%: The Government-sponsored initiative for energy conservation. One of the actions proposed is to set workplace air conditioners to 28°C or above, and workers are encouraged not to wear neckties or jackets at work during the summer season.

Shigeki Toma
Executive Vice President, Chairperson of the Global Environment Committee

Measures for Global Warming Prevention by the Isuzu Group



Isuzu Group's Activities for Global Warming Prevention

The Isuzu Group are actively working to stop global warming through reduction of CO_2 and other greenhouse gases in all situations from development to production, sales, distribution as well as in offices and at home.

Efforts at home

Leaflets for promoting energy saving

The Team Minus 6% campaign

Energy saving with an environmental household accounting book

Saving of water, electricity and gas, as well as encouraging frequent turning on/off of power

Energy saving through eco-driving

Greening at home

Fuel efficient driving with "Smoother" transmission (see p. 25)

Fuel consumption improves dramatically, thanks to *Mimamori-kun* (see p. 29)

I am the image character of *Mimamori-kun*.

Efforts at sales companies

Seminars held across Japan on fuel efficient and safe driving (see p. 30 and p. 42)

Energy/resource-saving and low-pollution vehicle promotion

Efforts for the environmental management of sales companies (see p. 20)

Vehicles complying with the new long-term emissions regulations equipped with environmentally friendly diesel engines (see p.24)

Saving water and energy

Efforts in research and development

Developing fuel-efficient engines and vehicles (see p. 23)

Holding seminars for fuel-efficient driving at the Isuzu facilities (see p. 42)

Eco-commuting and energy saving

Efforts in offices

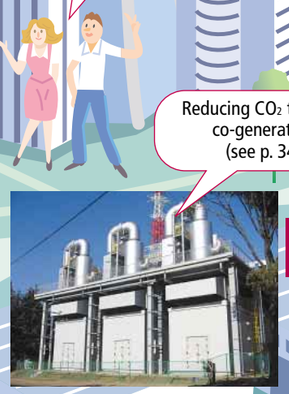
The Team Minus 6% activity in the entire Isuzu Group

Implementing Cool Biz (summer dress code) and Warm Biz (winter dress code)

Setting the cooling temperature at 28°C and warming temperature at 20°C

Reducing CO_2 through co-generation (see p. 34)

Publishing energy saving news



Efforts at plants

Air-leak prevention

Improving production efficiency through consolidating production plants

Reducing CO_2 through consolidating production lines (see p. 33)

Rolling out *Iitokodori* activities at the Isuzu Group Plant's Environmental Meeting (see p. 19)

Efforts in distribution

Modal shift in transport from road vehicles to carriers and ships. (see p. 39)

Reducing the volume of packages and packaging materials (see p. 40)

The milk run system in procurement distribution (see p. 40)

Efforts in the use of vehicles

ELF CNG (compressed natural gas), a clean energy truck with lower CO_2 emissions (see p. 26)

ELF Hybrid trucks with less CO_2 emissions and greatly improved fuel consumption (see p. 27)

Reducing CO_2 emissions by using ERGA, a route bus with low fuel consumption (see p. 21)

Joining the Kyoto Eco-Car Campaign (see p. 45)

Using public transportation and company CNG buses for commuting

Commuting on foot (see p. 43)

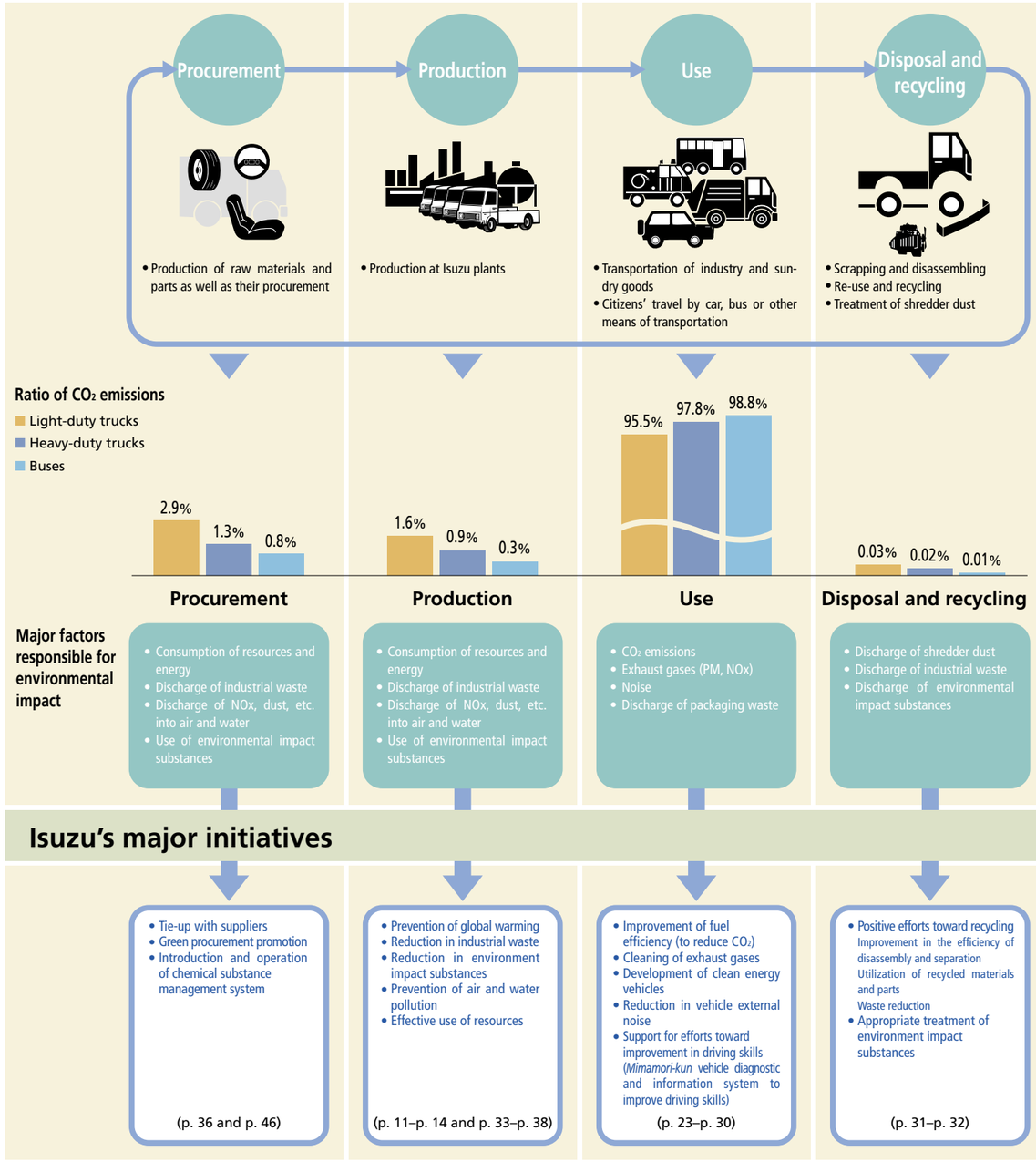
Promotion of eco-trucks at events and exhibitions (see p. 45)

Energy saving patrols in lunchtime and on holidays (see p. 34)

Overview of Isuzu's Environmental Activities, Efforts to Reduce Environmental Impact, and Environmental Accounting

Based on our assessment of the environmental impact of a vehicle's life cycle, from materials procurement to recycling and disposal, we are striving to reduce environmental impact, with priority on the areas where it is greater.

Life Cycle of Isuzu Products



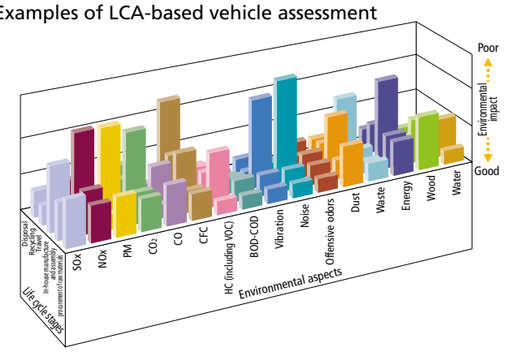
■ Environmental Impact per Vehicle and Efforts for Reduction

Isuzu is addressing environmental issues, based on a study of the Life Cycle Assessment (LCA) method. The environmental impact of vehicles mostly occurs during their use. CO_2 and exhaust emissions such as PM and NOx are main causes of such environmental impact. As described on the page 15 in relation to the ratio of CO_2 emissions, the emission ratio of these exhaust emissions becomes greater with heavy-duty trucks and buses, which have a longer life span.

Because of this, Isuzu is stepping up its efforts to improve fuel economy, that is, reduction of CO_2 and decrease exhaust gases, by using "soft" and "hard" tools. On the hardware side, we are focused on the development of fuel efficient and clean engines and vehicles (see p. 23–p. 27). On the software side, we are trying to educate our customers on fuel-efficient driving skills (see p. 29–p. 30).

We are also studying how to assess vehicle disassembly so that we can improve recyclability of end-of-life vehicles.

Examples of LCA-based vehicle assessment



■ Environmental Accounting

FY2005 environmental accounting

Environmental accounting, aimed at assessing environmental costs and their effects, is an important means for promoting environmental protection and business activities continuously and efficiently. To this end, Isuzu utilizes an environmental accounting system for management decisions. Environmental accounting is disclosed to its customers and stakeholders in its Environmental and Social Report. We plan to upgrade the disclosure by improving the accuracy of information and expanding the scope of cost-effectiveness analysis.

Environmental protection costs

Our fiscal 2005 environmental protection costs totaled ¥28.9 billion, and the amount of investment was ¥6.8 billion (of this, ¥27.1 billion was spent on research and development into measures to meet emission regulations, both domestic and overseas). These figures were tallied in accordance with the environmental accounting guidelines of the Ministry of the Environment. Combined costs, including non-environmental protection costs, were totaled with a proportional calculation.

Effects of environmental protection

Through research and development, we were able to improve product performance (refer to p. 21–p. 22 for environmental goals and achievements). At our plants, productivity was improved by integrating plants, CO_2 emissions were reduced by the introduction of a co-generation system, and landfill waste was reduced by recycling incinerator ash.

Environmental Protection Costs Target period: April 1, 2005 to March 31, 2006

(million yen)

Classification of environmental protection costs			Amount of investment	Costs	Details of major activities
1)		Environmental protection costs to curb environmental impact caused by main business activities: business-area cost	188	492	—
	Breakdown	1. Cost for pollution prevention	185	140	Waste water treatment, maintenance of pollution prevention facilities, measures to prevent vibration, improvement in energy conservation, waste reduction activities
	Breakdown	2. Costs for environmental protection	0	24	
	Breakdown	3. Costs for resource circulation, costs for disposal of industrial waste (including landfill)	3	328	
2)		Environmental protection costs to curb environmental impact caused by major upstream and downstream business operations: Upstream and downstream costs	0	719	Costs for rebuilding engines and transmissions, purchase of returnable racks
3)		Environmental protection costs in management activities: Management activity costs	301	344	Measures to comply with the Automobile Recycling Law within and outside the company, ISO14001 improvement activities
4)		Environmental protection costs in research and development: Research and development costs	6,320	27,127	Activities to reduce the environmental impact of products, measures to comply with domestic and overseas emissions regulations, such as new long-term emissions regulations in Japan and Euro IV
5)		Environmental protection costs in social activities: Social activity costs	0	77	Support for social contributions and environmental protection activities
6)		Costs to deal with environmental damage: Environmental damage recovery costs	12	122	Surcharge on pollution impact, legal costs, etc.
7)		Other environmental protection-related costs: Other costs	0	0	—
Total			6,821	28,881	—

Effects of Environmental Protection

Effects of Cost Reductions (million yen)

Cost reductions through energy conservation	75
Reduction in waste disposal costs	-12 (Increase)
Reduction in costs for tap water and water for industrial use	136
Total	199

Effects of Quantitative Reduction

CO_2 emissions	18,000 tons
Amount of landfill waste	92 tons
Water usage	10,000 m³

Efforts for Environmental Management

Led by its Global Environment Committee, Isuzu is promoting Consolidated Environmental Management to tackle global environmental problems group-wide.

■ Efforts for Environmental Management

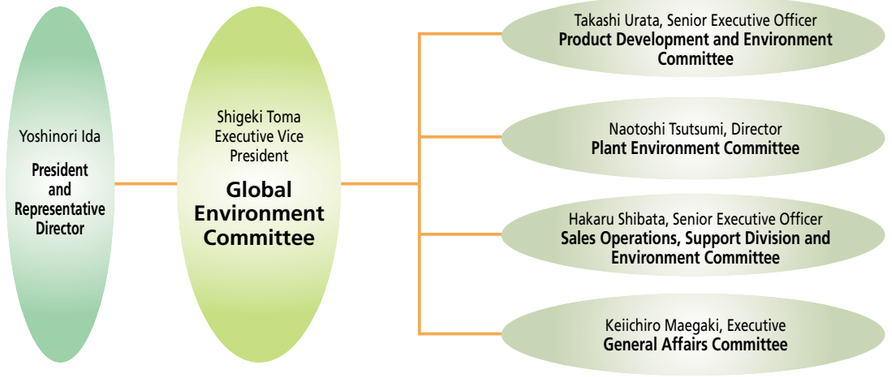
Recognizing environmental management as one of the most important management tasks, Isuzu is aggressively tackling environmental management under the initiative of the Isuzu Global Environment Committee.

Following the establishment of the Isuzu Global Environment Committee in August 1990, the Isuzu Charter on the Global Environment was instituted in May 1992. We also created an environmental logo that includes the slogan *For the future of mankind and the earth*. Our steady environmental efforts, throughout the life of a vehicle, will lead to the fulfillment of the charter toward a sustainable society.

Isuzu has an environmental management system to continuously reduce environmental impact caused by business activities and to strengthen its corporate structure in environmental management. To upgrade and expand such efforts globally, we launched Consolidated Environment Management activities in 2004, to reduce environmental impact by sharing the spirit of the Isuzu Charter on the Global Environment with group companies.

As a first step, eight domestic and six overseas manufacturing companies, as well as all of our 35 domestic sales companies, joined in the activities. All the manufacturing companies of consolidated environmental management were certified ISO14001–compliant in May 2005. The domestic sales companies have completed their surveys of the current situation at all of their operations and are now working toward "Isuzu Eco-Dealer certification".

Global Environment Committee Isuzu is continuing company-wide environmental efforts, led by the Global Environment Committee.




Takashi Urata


Naotoshi Tsutsumi


Hakaru Shibata

The Isuzu Charter on the Global Environment (established in May 1992)

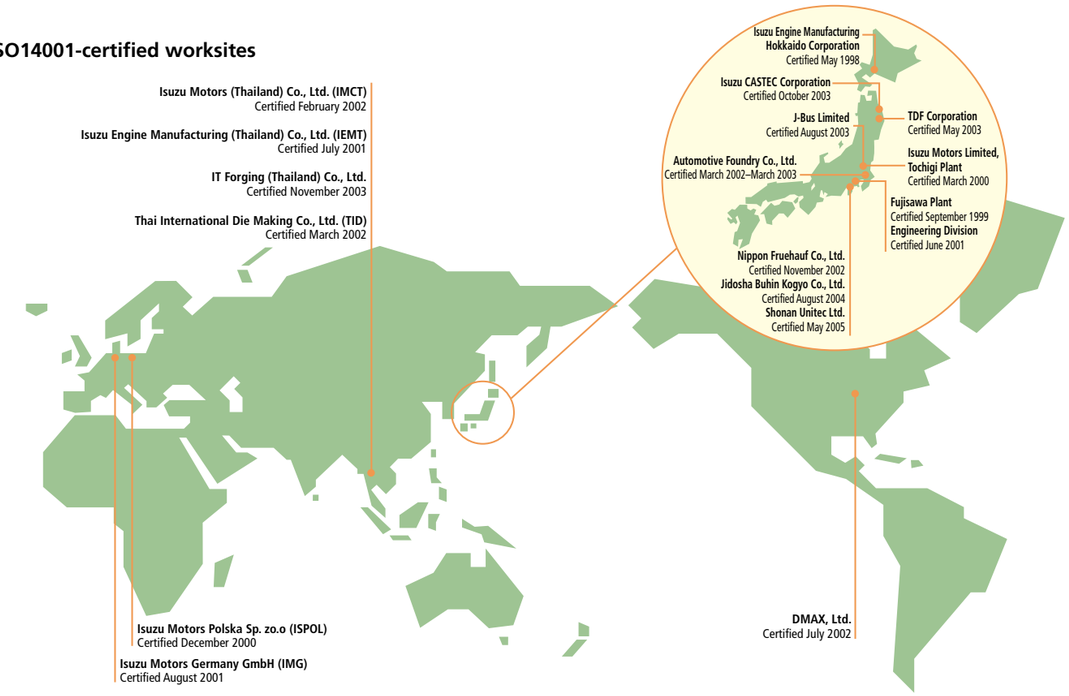
Policies in Coping with the Global Environment

1. Throughout the life of a vehicle, from production to usage to disposal, we will cope proactively with conservation of the environment.
2. In order to leave a beautiful earth to our descendants, not only through our business activities, but also as citizens of the earth, we will cope proactively with environmental conservation activities of localities and society.

Action Directives

1. We will minimize consumption of energy and emissions during our vehicle production processes, thus conserving the environment.
2. With regard to the exhaust gas, noise, etc. that are generated in the process of using vehicles, we will reduce them throughout the development and production of vehicles. Also, we will develop rational logistics systems and thus conserve the environment.
3. Realizing that resources are finite, we will aim to provide vehicles that are loved by customers for a long time, and we will thoroughly consider recycling, in order to make our vehicles recyclable during the disposal process.

ISO14001-certified worksites



■ Promoting Environmental Audits

Isuzu conducts annual environmental audits to ensure that the environmental management system has been properly deployed and that improvements have been made to this system where necessary. Through these audits, problems within our systems and performances are identified, and corrected continuously.

In fiscal 2005, we updated the related manuals and regulations in accordance with the revision of ISO14001. Audits for renewal of our certification and surveillance by the third party certification agency were conducted at all of our domestic plants and our engineering division. There were three cases of minor non-conformity, which were corrected properly.


Internal auditor training session

■ Complying with Environmental Laws and Regulations

At Isuzu, we are continuously promoting activities to reduce the environmental impact caused by our business operations. For this, we are committed to full compliance with government and municipal laws and regulations. We are also striving to reduce our environmental impact as much as possible, by setting up voluntary regulations that are stricter than those officially in force. At our worksites, Environment Management Committee meetings are held regularly to evaluate compliance with environmental laws and regulations, plus related requirements, and we are also continuously improving the ISO14001-based environmental management system. All legal requirements are currently being met.

■ Recall of Environment-Related Products and Legal Suits

There were three cases of environmental-related recall in fiscal 2005. In all cases, we recalled the products listed below and took the necessary corrective measures.

1. ELF light-duty truck: Problems associated with exhaust gas, noise in catalytic equipment
2. GIGA heavy-duty truck: Problems associated with noise in exhaust pipe
3. GALA bus: Problems associated with exhaust gas in engine control unit

A decision was given at the first trial of the first Tokyo air pollution lawsuit of October 29, 2002 for the claim that health damage was caused by automobile emissions, but it is still under examination in a hearing of intermediate appeal. The second and subsequent Tokyo air pollution lawsuits are pending in the lower court.

Efforts for Consolidated Environmental Management

Let us introduce how our group companies are working on consolidated environmental management, which has been progressively implemented since fiscal 2004.

■ Manufacturing Division

At Isuzu, the manufacturing division is promoting group-wide environmental protection activities in collaboration with eight domestic and six overseas group companies.

Environmental Meetings of Domestic Group Plants

Isuzu and eight domestic group companies plan their environmental efforts based on the Environmental Measures Guidelines, by setting mid- and long-term 2010 goals for the group and suggesting activities to reduce environmental impact, while maintaining their individuality. The group companies hold plant environmental meetings on a regular basis to confirm their action plans and the progress of their projects.

Plant environmental meeting

Iitokodori Campaign Underway

Plant environmental meetings are held with group companies acting as hosts, in turn. At each meeting, a plant tour and discussion are held to promote the *Iitokodori* campaign, learning and applying best practice of other companies.

Plant tour

Environmental Meetings of Overseas Group Plants

Isuzu and six overseas group companies held the first global plant environmental meeting at IMCT* in Thailand in November 2005. In accordance with Environmental Measures Guidelines, they launched environmental efforts that reflect the circumstances of individual countries.

The global plant environmental meeting became an active forum for discussion about plans and policies for plant environmental preservation, especially the prevention of global warming. Prior to the meeting, the members took a tour of the IEMT* plant and exchanged opinions about environmental efforts at their diesel engine production sites.

The first global plant environmental meeting

A tour of the engine manufacturing plant

* IMCT: Isuzu Motors Co., (Thailand) Ltd.
* IEMT: Isuzu Engine Manufacturing Co., Ltd.

■ Domestic Dealers

The domestic dealers are deeply involved with various environment-related laws and regulations in their business activities, such as vehicle sales and services.

Domestic Dealers' Involvement with the Environment

Isuzu introduced the environmental management system to its domestic group dealers starting in April 2005, and launched environmental efforts in collaboration with its dealers.

In accordance with Isuzu's original Environmental Measures Guidelines specifying dealers' environmental efforts, the dealers have been promoting environmental activities.

Fact-finding Surveys of Environmental Efforts

In October 2005, Isuzu's in-house environmental auditors surveyed the environmental efforts of Isuzu dealers at their sites. The auditors gave practical training to the personnel in charge of environmental issues on how to conduct environmental audits as well. Dealers' environmental awareness has been steadily increasing since such educational activities.

Fact-finding survey

Fact-finding survey

Environmental measures guidelines

In-house Auditor Training

A total of four ISO14001 in-house auditor training sessions were held in February and May 2006. A total of 62 trainees, mostly those in charge of environmental issues at the dealers, joined the training, and all of them were qualified as in-house environmental auditors.

With these auditors as leaders, dealers are accelerating their environment-related activities.

In-house auditor training session

In July 2006, we conducted internal audits on the progress of environmental activities under the management system, and gave dealers that met the standard Isuzu Eco-Dealer certificates.

Isuzu is promoting environmental activities further in close cooperation with the dealers.

Environmental Goals and Achievements

Here is the report on the goals and achievements of our environmental activities.

■ Manufacturing Environmentally Sound Products

FY2005 Environmental Goals	FY2005 Achievements	Self-evaluation	FY2006 goals	Mid -and long-term goals	Related pages
Improvement in fuel efficiency to prevent global warming • Continuous development of products with improved fuel efficiency	• Increased fuel efficiency by 8% through the improvement of engine in GIGA heavy-duty truck to meet the new short-term emissions regulations. (Results of in-house tests to compare with the earlier model) Released August 2005. • Achieved top level fuel efficiency through the improvement of the engine and the installation of exhaust after-treatment devices in the GIGA heavy-duty truck to meet the new long-term emission regulations. Released in April 2006. • Increased fuel efficiency by 9% through the improvement of the engine in the ERGA heavy-duty route bus to meet the new short-term emissions regulations. (Results of in-house test to compare with the previous model) Released in August 2005.	○	• Continuous development of products with improved fuel efficiency	• Achievement of maximum fuel efficiency	p. 23–p. 25
Cleaner emissions • Advanced launch of low-emission vehicles	• Complied with 2005 new long-term emissions regulations with the GALA heavy-duty sightseeing bus. Released in August 2005. • Complied with 2005 new long-term emissions regulations with the GALA HIGH DECKER 9 heavy-duty sightseeing bus. Released in February 2006. • Complied with 2005 new long-term emissions regulations with the GIGA heavy-duty truck. Released in April 2006.	○	• Advanced market introduction of low-emission vehicles	• Development of next-generation after-treatment devices	p. 23–p. 25
Reduction in vehicle external noise • Development of technology for vehicle external noise reduction • Development of technology for noise tone improvement	• Developed technology to reduce noise from engines and drivetrains and optimize the sound insulating structure through CAE and promoted R&D on high-performance sound absorbing materials. • Reduced idling noise in the FORWARD medium-duty truck by 1.5dB from the previous model. Released in May 2005.	○	• Development and commercial application of technology to curb noise	• Development of low-noise diesel-powered vehicles	p. 27
Development and promotion of clean-energy vehicles • Development of new technology for marketing such vehicles	• Released light-duty trucks ELF HYBRID and ELF CNG-MPI in April 2005.	○	• Development of new technology and vehicle applications	• Development of next-generation clean-energy vehicles	p. 26–p. 27
Vehicle recycling • Full compliance with the Japanese Automobile Recycling Law and EU directives • Upgrading EU's free recovery system of end-of-life vehicles • Research to find uses for recycled materials	• Complied with the 2005 Automobile Recycling Law: Achieved 65.7% ASR recycling rate (standard rate of more than 30%) and 93.6% air bag recycling rate (standard rate of more than 85%). • Started to construct EU's end-of-life vehicle recovery system as planned. • Succeeded in mixing 52% recycled material in the center console box—an interior plastic component of the FORWARD medium-duty truck. This will be introduced in the vehicles of September 2006 production.	○	• Completion of EU's free recovery system of end-of-life vehicles and launch of its smooth operation • Compliance with the standards required by Automobile Recycling Law • Increase in the use of recycled materials	• Achievement of a more than 95% recycling rate of used vehicles by 2015	p. 27, p. 31–p. 32
Reduction in environmental impact substances • Reduction in the usage of lead, mercury, cadmium and hexavalent chromium	• Reduced the usage of lead to 1/3 from the 1996 level. • Terminated the use of mercury except where it is permitted. (An extremely small amount for parts for safety reasons) • Switched from cadmium and hexavalent chromium to alternative substances to achieve goals.	○	• Efforts to reduce the use of lead, mercury, cadmium and hexavalent chromium A reduction in the use of lead, to 1/10 or less, of the 1996 level in 2006 and subsequent years, to1/4 or less for heavy-duty commercial vehicles Termination of the use of mercury from January 2005 and cadmium from January 2007	• Reduction in the use of lead, mercury, cadmium and hexavalent chromium Ban on the use of hexavalent chromium from January 2008 onward Continuous reduction in the usage of lead, mercury and cadmium	p. 27, p. 31–p. 32
Reduction in air conditioner refrigerant • Compliance with Japan Automobile Manufacturers Association's voluntary restraints: Reduction in the usage of air conditioner refrigerant by 20% by 2010, from the 1995 level	• Complied with Japan Automobile Manufacturers Association's voluntary restraints: Achieved a 44% reduction in the amount of refrigerant per vehicle in fiscal 2005.	○	• To keep the reduction of refrigerant for the refrigerant system at the current top level in this fiscal year, too	• Switchover to fluorocarbon-free air conditioners	p. 27
Reduction in VOC* in vehicles • Establishment of a method for measuring VOC from trucks and buses	• Established a method for measuring VOC in trucks and buses and promoted the development of VOC reduction technology.	○	• Development of low VOC vehicles	• Increase in the number of low VOC vehicles	p. 27

* VOC (Volatile organic compounds such as formaldehyde and toluene)

■ Building Environmentally Friendly Plants

FY2005 Environmental Goals	FY2005 Achievements	Self-evaluation	FY2006 goals	Mid -and long-term goals	Related pages
Prevention of global warming by reduction in CO_2 emissions • CO_2 emissions: Less than 200,000 tons, down 3.8% from the previous year • Improvement in energy efficiency by reduction in energy consumption by 1% per unit per year	• CO_2 emissions: Reduced to 190,204 tons with an 8.7% decrease from the previous year and achieved the goal. • CO_2 emissions per unit: Reduced by 10.2%, against more than 1% planned and achieved the goal.	○	• To keep CO_2 emissions to less than 188,300 tons • Reduction in per unit CO_2 emissions to more than 1%	• Reduction in CO_2 emissions by more than 8% per unit from FY2004 level by FY2010	p. 34
Reduction in waste • Strengthening of the zero emission measures to less than 76.8 tons of emissions	• Landfill waste: Reduced to 65.3 tons, against less than 76.8 tons planned and achieved the goal. Achieved the goal of one ton reduction per factory per month, two months before the original plan to be completed by the end of 2005. Recycled incinerator ash.	○	• To keep landfill waste to less than one ton per plant per month and less than 24 tons per year	• To keep landfill waste to one ton per plant per month and less than 24 tons per year	p. 35
Control and reduction of environmental impact substances • Reduction of VOC emissions in the painting process to less than 45g/m² by the end of FY2005	• VOC emissions: Reduced to 17.9g/m² against the 45g/m² planned and achieved the goal. • Review of goals: Industry guidelines = less than 25g/m² in 2010 (30% reduction from 2000 level) and Isuzu voluntary goals = less than 19g/m² in 2010 (50% reduction from 2000 level)	○	• To keep VOC emissions to less than 19g/m²	• To keep VOC emissions to less than 19g/m² by the end of FY2010	p. 36
Logistics • Improvement in vehicle delivery mode (Target: less than 20% driving transport) • Increase in vehicle delivery efficiency (Target: more than 70% direct delivery)	• Ratio of driving vehicle delivery: Reduced to 19% with a 5% decline from the previous year and achieved the goal. • Ratio of direct delivery on carrier/ship : Increased to 76% with a 9% rise from the previous year and achieved the goal.	○	• To understand details of transportation energy based on the revised Energy Saving Law • To plan a more than 1% energy reduction for FY2007	• To reduce transportation energy to more than 1% per year	p. 39–p. 40

■ Environmental Management

FY2005 Environmental Goals	FY2005 Achievements	Self-evaluation	FY2006 goals	Mid -and long-term goals	Related pages
Environmental management • Continuous improvement in ISO14001 environmental management system • Promotion of environmental consolidation of group companies	• All domestic and overseas environmentally-consolidated manufacturing sites were certified with ISO14001and renewals continued. • Promoted consolidated environmental activities with eight domestic manufacturers with FY2005 goals set and achieved and held meetings with six overseas manufacturers to kick off the initiatives in November. • Started implementing the environmental management system in all 35 dealers and carried out mid-term audits.	○	• To promote consolidated environmental activities with domestic and overseas manufacturers and dealers	• To promote Isuzu group's consolidated environmental management • To achieve the group's long-term goals	p. 17–p. 20
Green procurement promotion • Promotion of green procurement of materials and parts • Promotion of ISO14001 certification among suppliers (a certification rate of more than 78%)	• Held supplier meetings to explain Isuzu's purchasing policies and requested acceleration of implementing the environmental management system and of the reduction of environmental impact substances in materials and parts to the suppliers. • ISO 14001 certification ratio reached 78.3% ,up 4.4% from the previous year.	○	• To promote green procurement of materials and parts • To promote the introduction of the environmental management system at suppliers (81.6% or more in FY2006)	• To promote measures to reduce environmental impact substances including the introduction of IMDS* • To implement the environmental management system in more suppliers	p. 46

* IMDS: International Material Data System

■ Social Report

FY2005 Environmental Goals	FY2005 Achievements	Self-evaluation	FY2006 goals	Mid -and long-term goals	Related pages
Environmental communication • Publishing of environmental reports in Japanese and English between September and December 2005 • Participation in events and exhibitions • Promotion of activities for social contribution	• Issued environmental and social reports in Japanese in September 2005 and in English in December 2005. • Participated in events such as Eco-Products 2005, Eco Car World, and the Fujisawa Environmental Fair. Awarded Transport Minister's Prize of Eco-Products Awards. • Dispatched engineer to National Antarctic research expedition for technological cooperation, cleaned the areas near the plants, and joined community exchange activities. • Contributed to the activities of overseas communities in many events and public relations initiatives organized in alliance with overseas dealers and distributors.	○	• To issue environmental and social reports • To participate in events and exhibitions • To promote activities for social contribution	• To promote social contribution activities and environmental communication	p. 41–p. 49

The "o" mark represents the achievement of the goals in self-evaluation.

Making Environmentally Friendly Products

For the benefit of society, Isuzu is committed to creating a new value that makes it possible to balance curbing environmental impact with safety and economy.

■ *See* Technology

In pursuit of customers' trust is the engineering philosophy of Isuzu. The company aims to manufacture products that earn the trust of all customers and stakeholders. Based on this philosophy, Isuzu seeks to advance technology in three areas—safety, economy, and the environment. Our action is guided by the basic development concept called "See" technology. The "S" stands for safety, the first "e" for the economy and the second "e" for environment.

Led by the engineering philosophy and the basic concept, we develop technologies and create a new value for society that harmonizes our efforts to curb environmental impact with safety and economy.

■ Eight Major Tasks

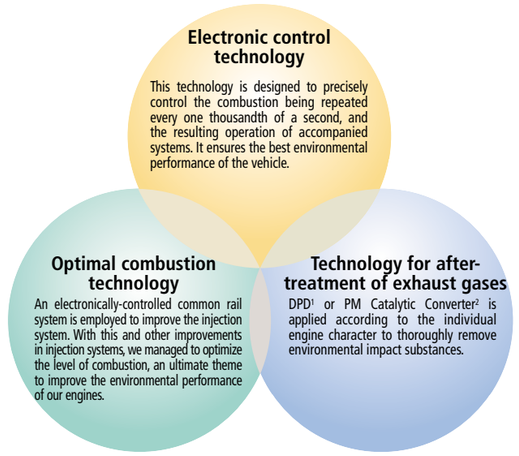
With the following eight priority tasks in engineering environmentally friendly vehicles, we are developing various technologies to minimize environmental impact throughout the life cycle of vehicles.

1. To improve fuel efficiency and reduce CO_2 emissions
2. To make exhaust gases cleaner
3. To develop clean-energy vehicles
4. To reduce vehicle external noise
5. To reduce environmental impact substances
6. To improve recyclability
7. To reduce air conditioner refrigerants
8. To reduce VOC in vehicle cabins

■ I-CAS: ISUZU Clean Air Solutions

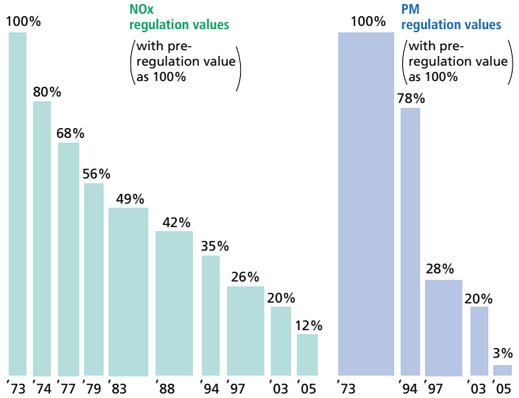
I-CAS is Isuzu's next-generation clean technology that has incorporated the most advanced technologies to meet the various environmental requirements for trucks. It combines Isuzu's three key next-generation technologies—optimal combustion technology, after-treatment technology for exhaust gases, and electronic control technology—to reduce environmental impact from the overall aspect of the vehicle. I-CAS is Isuzu's clear solution to environmental requirements.

Three key technologies of I-CAS



1. DPD (Diesel Particulate Defuser): After-treatment technology to clean and revive a ceramic filter by burning PM caught in a filter using Isuzu's own exhaust gas temperature control system. The system features precise-fuel injection by the electronically controlled common rail system and the exhaust throttle.
2. Technology to remove hazardous substances in the exhaust gases by fitting a PM Catalytic Converter in the exhaust system and passing all the gas. HC emissions can be greatly reduced by oxidizing it by catalyst of a precious metal and converting it into water and carbon dioxide.

Changes in Exhaust Gas Regulation Values



■ D-CORE: New Diesel Engine Series

D-CORE is the name of the next-generation diesel engine series, accommodating Isuzu's original concept, technology and performance that should be the core of future diesel engines.

Isuzu is pursuing diesel engine efficiency to raise the basic performance of commercial vehicles. The biggest challenge in its pursuit is how to balance environmental performance and economic efficiency. To solve this, we maximized engine torque per displacement, and upgraded the engine performance, by making the engine lighter and more compact. The D-CORE next-generation diesel engine series is the fruit of such development efforts.

D-CORE series

6UZ1-TCS diesel

The 6UZ1-TCS engine installed on the GIGA heavy-duty truck is developed for harmony with humanity and society. It complies with the 2005 emissions regulations, the world's most rigorous, new emissions regulations.

By increasing engine torque per displacement, we made the engine lighter and smaller to secure extra loading capacity and improve transportation efficiency. To meet the need for super-turbocharging, the cylinder block and connecting rod have a hyper rigid structure for extreme reliability and durability.


6UZ1-TCS engine

ISUZU NEXT-GENERATION DIESEL D-CORE

We have Realized Compatibility between Fuel Efficiency and Low Emissions.

The 6UZ1 engine was developed with emphasis on smaller displacement and super-turbocharging. We had to overcome various engineering problems by integrating technologies, involving the engine body and after-treatment as well as electronic control technology. The new engine meets the new long-term emissions regulations, features light-weight, compact size and high efficiency. We achieved compatibility between fuel efficiency and low emissions through the use of electronically controlled, one-way-cooled EGR (Exhaust Gas Recirculation) technology, designed for larger air flow and increased cooling. This is the world's most advanced engine for heavy-duty trucks, developed by utilizing various cutting-edge technologies. We intend to improve the 6UZ1 engine further to comply with future long-term emissions regulations, which are to be more stringent.


Iwao Sasaki in charge of development

4HK1 diesel

The 4HK1 engine, mounted on the FORWARD medium-duty truck, complies with the new 2005 long-term emissions regulations. Compared with the previous model, fuel efficiency was increased by 5% from the previous non-turbocharged engine. Engine weight was also reduced by 10% due to lightweight design, resulting in an increase in loading capacity.

The 4HK1 is highly efficient engine with much more power compared to a conventional non-turbocharged engine. It also has high-level performance of environment, economy and power.


4HK1 engine

■ GIGA Heavy-duty Truck

The GIGA heavy-duty truck is powered by the 6UZ1-TCS engine, the flagship model of the D-CORE series. The vehicle, equipped with a DPD (Diesel Particulate Defuser) after-treatment device —the crystallization of leading-edge technologies—achieves the convenience of freedom from the constraints of infrastructure and environmental performance, and complies with the new long-term emissions regulations (2005 emissions regulations).

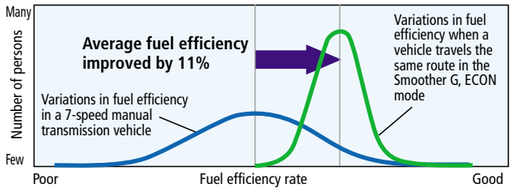
GIGA G-CARGO with Wing body

High Fuel-efficiency with the Smoother G Transmission

The GIGA heavy-duty truck is equipped with the fuel-efficient "Smoother G" transmission, which allows more economical driving. For the driver, the truck realizes energy efficient driving through its optimum gear shifting.

To maximize the effect of fuel efficient driving, gear shifting and clutching are automatically operated with optimal timing. This prevents variations in fuel consumption due to differences in driving skills, and enables fuel efficient driving of an experienced driver.

Average Fuel Efficiency Improvement in the Smoother G, ECON Mode (7-speed Manual Transmission)

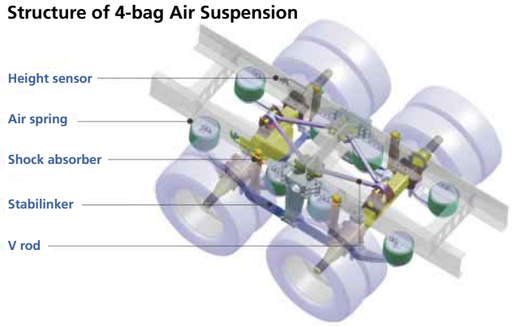


Model driving pattern: CYL77V7 model with van body and air deflector. Rate of loading trips 80%. Loading rate 70–100%. Expressway 43%. Ordinary road 57%. Figures represent those obtained with in-house tests for model driving and so actual fuel efficiency may differ according to conditions (weather, traffic , etc.).

High Transportation Quality Due to 4-bag Air Suspension

The 4-bag air suspension is a full-float type, designed to support the whole cargo bed with air springs. The air springs receive all vibrations from the road surface, absorb the thrusts from the rear shaft that greatly affects cargo, and helps to significantly reduce cargo shifting and damage.

Structure of 4-bag Air Suspension



Technology and Design for Safety

In addition to various systems to ensure active safety and passive safety, Isuzu was the first in Japan to introduce into its heavy-duty trucks a driving concentration monitor to watch for slightly unstable steering that occurs due to looking aside or sleepiness, and a warning device using milliwave sensor to maintain a safe distance between vehicles. These devices have a better and more accurate sensor than conventional laser-based ones and are helpful in low-speed driving or cornering in urban areas.

We have Harmonized Economy with Environmental Performance at a Higher Level.

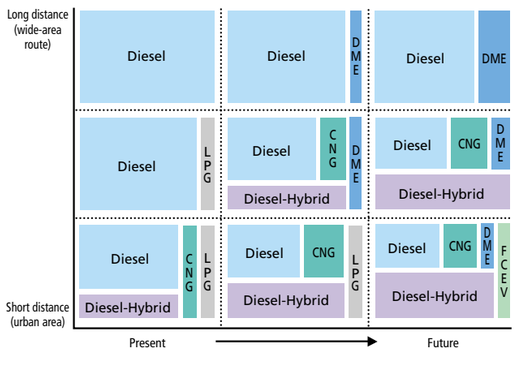
In the new GIGA, we have harmonized its excellent economic efficiency and environmental performance. Full consideration was also given to improvements in safety performance. We achieved outstanding fuel efficiency by improving its engine, "Smoother G" and vehicle, while making it compliant with the new long-term emissions regulations. Loading capacity is increased by reducing the vehicle weight, and bed space is also expanded. To ensure safety, we developed a driving concentration monitor and a preventive safety device the IESC (see p. 28), to prevent jack-knifing and overturning peculiar to tractors/trailers. The new GIGA fully meets customer needs and demands for environmental performance.

Norimitsu Hayashi
in charge of development

■ Eco-car Development

Most of commercial vehicles are powered by diesel engines. With Isuzu's environmental strategies for product development, the first priority is to make diesel exhaust gas cleaner. We are also developing low-pollution alternative-energy vehicles, for further reduction of CO_2 and other air pollutants, and for energy conservation.

Chart of Isuzu Eco-car development

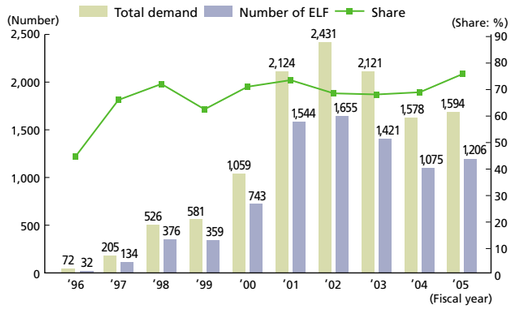


CNG (Compressed Natural Gas)
DME (Dimethyl Ether)
LPG (Liquefied Petroleum Gas)
FCEV (Fuel Cell Electric Vehicle)
* Both the hybrid and DME engines employ diesel cycle combustion system and are based on diesel engines.

Development of CNG Vehicles

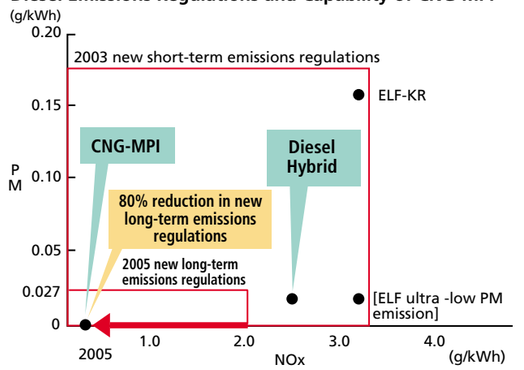
CNG vehicles run on natural gas. They have distinct advantages over diesel vehicles in terms of exhaust emissions such as NOx and PM, which seriously affect air pollution in urban areas. With lower CO_2 emissions, CNG vehicles are promising as low-pollution, alternative-energy vehicles.

Registered ELF CNG Vehicles



At Isuzu, we are enhancing our CNG vehicle lineup, ranging from the ELF light-duty truck to the FORWARD medium-duty truck and the ERGA heavy-duty route bus, for use in city areas with CNG infrastructure.

Diesel Emissions Regulations and Capability of CNG-MPI



ELF CNG-MPI

Released in April 2005, total sales of the ELF CNG-MPI exceeded 8,500 units by the end of FY2005. ELF-CNG-MPI, the latest model of the ELF CNG, is the most popular CNG-powered truck in Japan.

For the first time in Japan, the ELF CNG-MPI complied with the new long-term emissions regulations for CNG vehicles, the *CNG vehicle emissions standards*, by adopting a multipoint injection (MPI) system. The NOx emissions were reduced by 80% from the goals set in the new long-term emissions regulations for diesel engines. In addition, they emit almost no PM or black smoke. Its emission level is even lower than the next NOx and PM emissions regulations, as future long-term regulations. The ELF CNG-MPI achieves far cleaner emissions than other low-pollution vehicles. Besides its superior environmental performance, its utility as a commercial vehicle is also enhanced.

ELF CNG-MPI

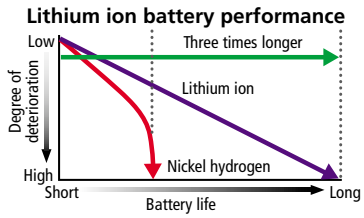
Development of Diesel Hybrid Vehicles

Diesel hybrid system enable the CO_2 emissions of fuel-efficient diesel vehicles to be cut even further. We are focusing on developing light-duty diesel hybrid vehicles that are most useful in towns where traffic has to stop and start often.

ELF HYBRID

Thanks to the motor-assisted, fuel-efficient driving system, the ELF Hybrid has greatly improved fuel economy and emission performance. The fuel efficiency increased by 35% in M15 mode, which is normally used for fuel efficiency assessment of hybrid vehicles. CO_2 emissions were reduced by 25%. PM and NOx emissions were also cut by more than 85% and 25% respectively, against the 2003 new short-term emissions regulations.

We are pursuing the ultimate goals of economic efficiency, durability, dependability and basic safety performance required of commercial vehicles, by incorporating advanced technologies such as Isuzu's own PTO-type parallel drive system, lithium ion batteries, and "Smoother E" automatic transmission.



ELF HYBRID

■ Reduction in Vehicle External Noise

Isuzu is working not only to comply with the world's most stringent noise regulations, but also to reduce idling noise and to improve the unpleasant noise tone of diesel. Major efforts have focused on reducing engine and drivetrain noise, studying an optimal sound insulation structure by analysis of noise and its transmission route, and research and development of high-performance sound-absorbing materials. Idling noise in the FORWARD medium-duty truck, released in May 2005, was reduced to 1.5dB below that of the previous model.

■ Reduction in Environmental Impact Substances

We have prepared guidelines for regulating the use of four heavy metals, to comply with the EU-ELV (European Union End-of-Life Vehicles) directive and the Japan Automobile Manufacturers Association's voluntary restraints. Efforts to reduce environmental impact substances are underway, with mercury already banned except where the use is permitted. To achieve these goals, we are switching from lead, cadmium and hexavalent chromium to alternative substances.

Lead	Usage in and after 2006 will be reduced to less than 1/10 of 1996 level (less than 1/4 for heavy-duty commercial vehicles).
Hexavalent chromium	Use in new vehicles will be gradually banned from 2003 through 2008.
Cadmium	Use in new vehicles will be gradually banned from 2003 through 2007.
Mercury	Use in new vehicles was banned following the enforcement of the Automobile Recycling Law in January 2005, except for use on some lighting fixtures and display equipment.

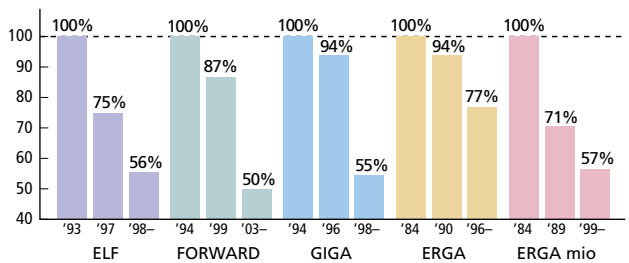
■ Improvement in Recyclability

Isuzu is making various efforts at each stage of a vehicle's life cycle, to reduce environmental impact. Consideration is given to the reduction of waste at the design stage. The company is also working to find ways to use recycled material. In fiscal 2005, it developed a console box made of 52% recycled material for use on the FORWARD medium-duty truck (see p. 32).

■ Reduction in Air Conditioner Refrigerants

Since the alternative refrigerant HFC134a is also a greenhouse gas, we set a target to cut its use by 20% below 1995 levels. The usage is now 44% lower than before. Also under development is an air conditioning system that uses CO_2 or other substances as a refrigerant.

Reductions in the use of air conditioner refrigerant in Isuzu vehicles (per unit)



■ Reduction in VOC in Vehicles

At Isuzu, we are taking measures to cut VOC* in vehicle cabins, in line with the Japan Automobile Manufacturers Association's policy for voluntary reduction efforts. There are a total of 13 hazardous substances designated by the Ministry of Health, Welfare and Labour.

* VOC: Volatile organic compounds such as formaldehyde and toluene

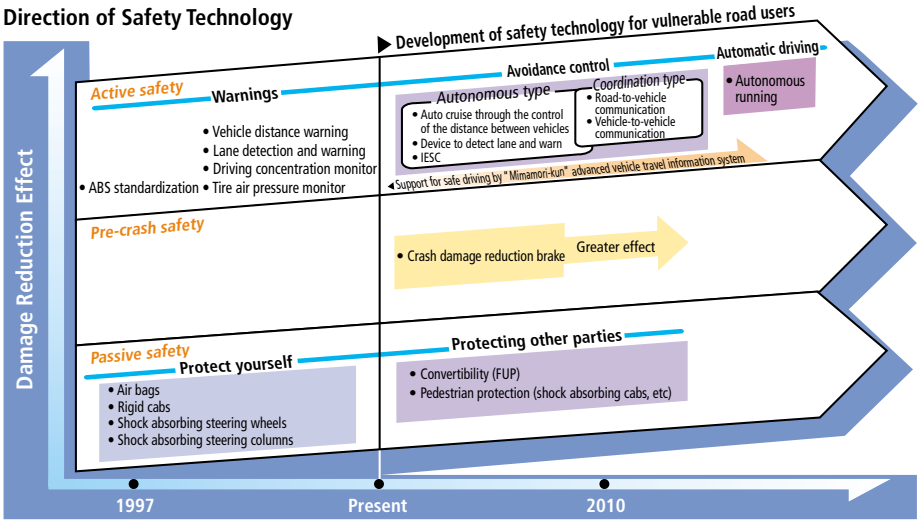
Approach to Safety Technology

Isuzu pursues safety as a most important requirement of trucks, by simulating a vehicle's starting, running, braking, stopping and emergencies.

■ Direction of Safety Technology

Under the concept "Safety is standard equipment," Isuzu has been working continuously to develop and offer safety equipment from the standpoints of active safety (accident prevention safety technology) and passive safety (collision safety technology). Isuzu is actively developing safety technology further for the next target, "to protect other parties," such as pedestrians and vehicles.

Direction of Safety Technology



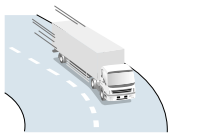
■ New Safety Technology

IESC: Isuzu Electronics Stability Control

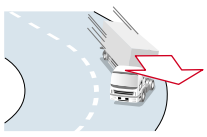
IESC is an electronic stability control system designed to avoid accidents such as a jackknifing, a phenomenon peculiar to tractors/trailers, and trailer overturning. The system detects a condition in which a vehicle becomes unstable and warns the driver with a buzzer. IESC helps a vehicle to run in a stable position, through engine output control and braking control. It is cutting-edge technology that Isuzu is proud of.

Jackknife Phenomenon

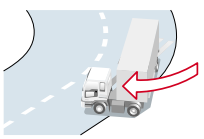
Vehicle without IESC



Entering a corner

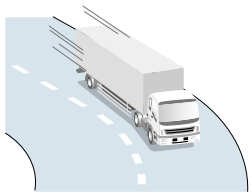


Trailer pushes against the cab by sudden steering or slowdown.

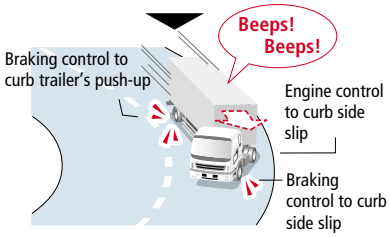


Jackknifing occurs, in which the coupling is bent.

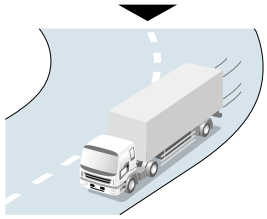
Vehicle with IESC



Various sensors detect how a vehicle turns.



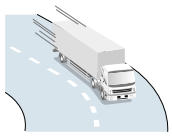
When a vehicle becomes unstable, a warning is given. At the same time, the vehicle's position is corrected by engine control and cab trailer braking control.



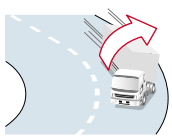
Vehicle runs in a stable position.

Trailer Overturn

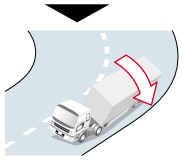
Vehicle without IESC



Entering a corner

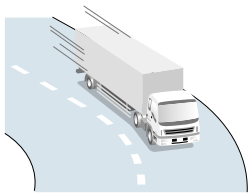


One of the trailer wheels floats due to speeding and sudden steering.

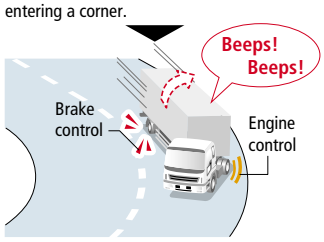


Vehicle loses stability and overturns.

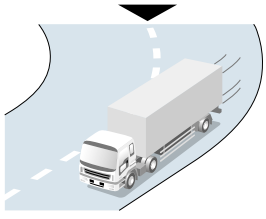
Vehicle with IESC



Sensor senses lateral acceleration and detects that the vehicle is entering a corner.



A warning is given when lateral acceleration exceeds a certain level, with trailer braking control and engine control coming into operation to prevent the vehicle's rolling.



Vehicle runs in a stable position.

MIMAMORI-KUN Helps Reduce Environmental Impact

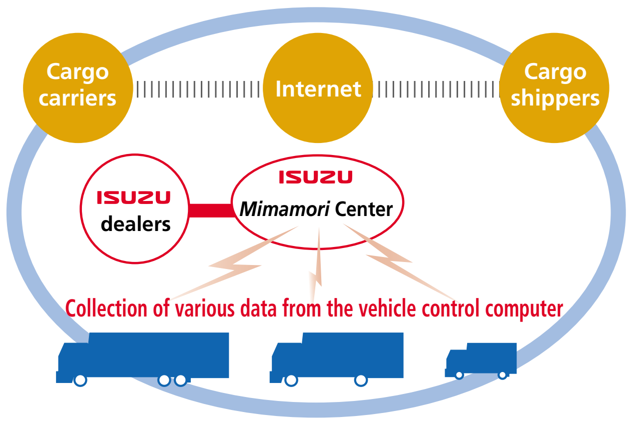
Designed to analyze operation data and give advice on fuel efficiency and safe driving, the *Mimamori-kun* online service contributes greatly to society, complying with the revised Energy Saving Law.

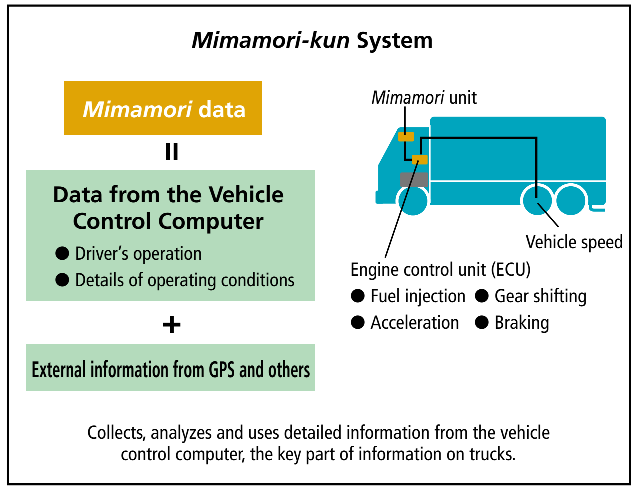
■ Isuzu's Original Advanced Vehicle Travel Information System

The *Mimamori-kun* online service is an advanced vehicle diagnostic and information system, designed to meet the requirements of customers who want to increase efficiency of vehicle operation and improve fuel economy. It helps improve customers' transportation quality by keeping track of delivery costs per shipper and the route traveled, thus providing detailed information about concrete measures for accident reduction, safe driving and improvement in fuel efficiency per driver.

This online service operates via a packet communication network and the Internet. The system collects operational data from vehicles at the *Mimamori* Center, from where the vehicle operation data on fuel efficiency, CO_2, NOx and PM emissions, vehicle's positions, driver's performance, etc. is sent to users after analysis. This service is well received by customers as a system that allows detailed and real-time checks on daily operating conditions.

Mimamori-kun **online service system**





■ Expanding *Mimamori-kun* Application to All Domestic Commercial Vehicles

The origin of *Mimamori-kun* is "*Mimamori* unit," a device to collect a vehicle's data, which was first installed on the GIGA heavy-duty truck in 2000. This unit was developed and applied to a commercial product and led to the "*Mimamori-kun* offline version," which entered service in January 2002. The second version of the offline *Mimamori-kun*, with a memory card to store data and a detailed analysis facility, came out in August the same year, paving the way for the creation of a prototype of the online model.

After launching the *Mimamori-kun* online service first for GIGA in February 2004, we expanded the service to FORWARD medium-duty and ELF light-duty trucks from February 2005 and completed a system to cover all domestic commercial vehicles in December of the same year.

■ *Mimamori-kun* Awarded Transport Minister's Prize of the 2nd Eco-Products Awards

Mimamori-kun was awarded the Transport Minister's Prize of the second Eco-Products Awards at the Eco-Products 2005, the major environmental event in Japan. The awards were established to honor environmentally conscious products and services and to promote the development of Eco-products and their widespread use. *Mimamori-kun* received the honors because its useful report service for energy conservation driving and the real-time operation information service are helpful for eco-driving.

Award ceremony attended by President Ida (above) and a commemorative plate (right)

■ *Mimamori-kun* Complying with Revised Energy Saving Law

With the revised Energy Saving Law coming into effect in April 2006, specified cargo carriers and shippers were required to submit their business revamping plans and regular reports on their use of energy. Numerical management of energy usage has become more essential to the logistics industry, especially in the face of rising oil costs.

Mimamori-kun conforms to the revised Energy Saving Law. One outstanding feature of this system is that it can easily obtain data on transportation volumes in ton-kilometers and energy usage, which are necessary for revamping plans and reports.

■ Reporting Service on Fuel Efficient Driving

In cooperation with its domestic dealers, Isuzu has been holding workshops across the country on fuel efficient driving. Fiscal 2006 marks the 11th year since such seminars commenced. The reporting service on fuel efficient driving provided by *Mimamori-kun* is highly praised by customers and those who have attended the workshops. *Mimamori-kun* is able to check a driver's performance thoroughly and advise how to improve their operations in detail.

The Eco-Products Award Encouraged Us to Set Higher Goals

Tsutomu Kitagawa
in charge of development

Noboru Maesono
in charge of planning

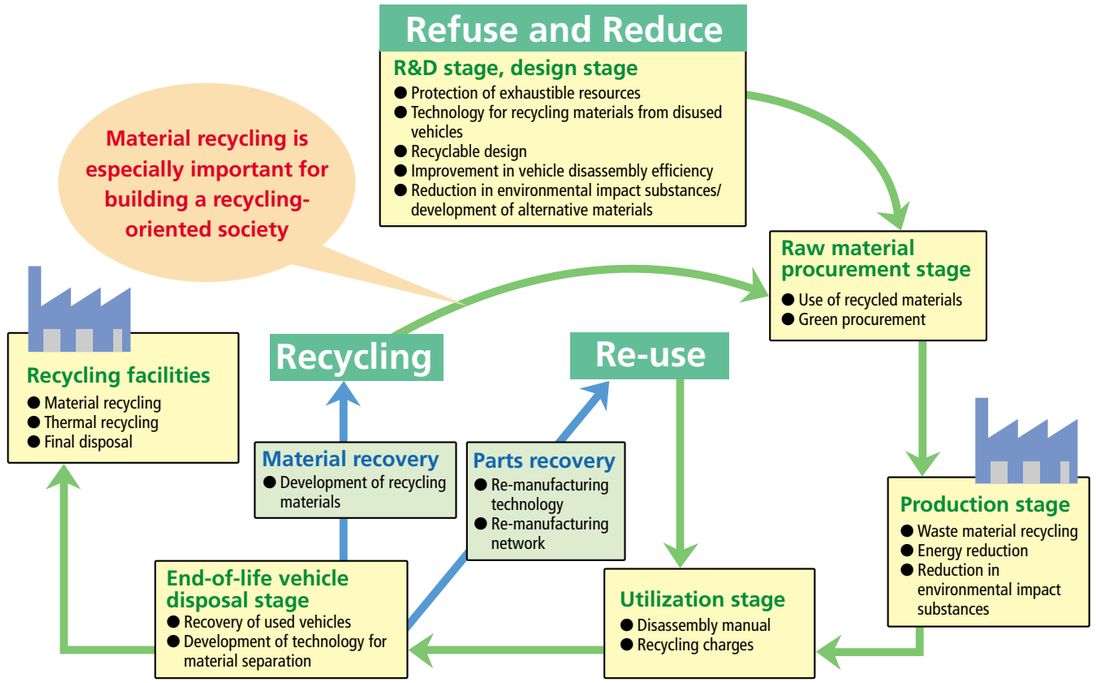
We are proud of *Mimamori-kun* because it was developed and packaged by ourselves on the basis of our own concept. It was most impressive that a reporting system on energy efficient driving was completed as an offline service and launched in-house only. It is honorable that *Mimamori-kun*, when upgraded to an online version, won the Eco-Products Award for its outstanding performance. I will continue my development work with enthusiasm as ever. (Kitagawa)

We received the Eco-Products Award because we took a closer approach to improve fuel efficiency, not just providing information. Inspired by the award, we expanded service to cover all commercial vehicles from domestic automobile manufacturers, and since the revision of the Energy Saving Law, we have seen a sharp increase in orders for *Mimamori-kun*, with sales in 2006 totaling 7,000 units as of June, up 300% from the previous year. (Maesono)

Approach to Recycling

To create a sustainable, recycling-oriented society, Isuzu is promoting recycling as part of its efforts to reduce environmental impact at all stages of a vehicle's lifecycle, from research and development to disposal.

■ Approach toward Recycling



■ Practice of the four R's

To help create a recycling-oriented society, Isuzu Motors, as a global company, is practicing the following "Four 'R'" actions throughout a vehicle's lifecycle.

Four R's	Actions	Examples	Development and design	Material procurement	Production	Use	Post use
1. Refuse	Not to use environmental impact substances Not to use or make unnecessary products	To review and reduce parts used in a vehicle To abolish the use of packing materials such as corrugated paper and wood and to use returnable materials	●	●	●		
2. Reduce	To reduce environmental impact substances To develop alternative materials and carbon-neutral technology To reduce the part items and vehicle weights	To use hexavalent chromium-free surface treatment To replace South-sea wood with metals and materials from planted trees To replace cutting oil with water-soluble liquid	●	●	●		
3. Reuse	To re-use parts and accessories To utilize parts from the re-manufacturing network	To re-manufacture engines, starters, generators and transmissions and to indicate resin materials and rubber-made parts	●		●	●	●
4. Recycle	To recycle used products To develop recycling technology and improve efficiency in disassembly To upgrade our recycling system	To develop center console boxes from recycled materials To conduct demonstrative research on glass recycling To indicate resin materials and rubber-made parts	●	●	●	●	●

■ Recycling of Plastic Materials

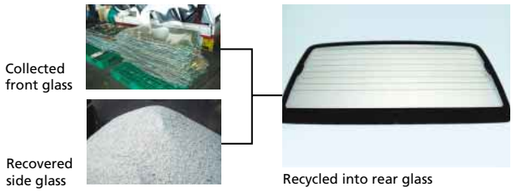
Isuzu has succeeded in making colored interior parts for trucks using 52% recycled materials recovered from end-of-life vehicles. The center console boxes, which are the first automobile plastic parts in the industry that were certified with an Eco Mark, will be fitted in the FORWARD medium-duty truck from September 2006. The key technologies employed are as follows:

- Chromatic technology: Highly reflective pigment was added
- Technology for shielding coating films: Extremely low light transmission pigment was used to shield coating films, which are foreign materials
- Technology for stabilizing material strength: Necessary strength was secured by innovative material design

FORWARD center console box made from recycled material

■ Glass Recycling

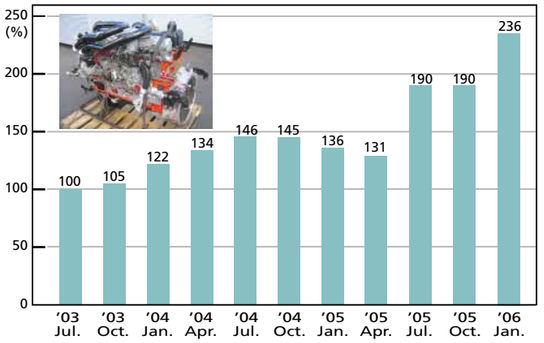
ASR[1] generated by end-of-life vehicles (ELV) has about 10% glass content, a residue of thermal recycling. To achieve glass recycling of higher quality, Isuzu is trying to re-use glass recovered from ELVs for glass products. In fiscal 2005, it continued demonstrative experiments, including research on infrastructure, in collaboration with scrap contractors, glass makers and other automobile manufacturers. As a result, Isuzu was able to collect and recycle about 50 tons of glass at lower recycling costs.



■ Parts Re-manufacturing

We share information on re-manufactured parts with dealers by linking them to our in-house re-manufacturing network so that we can promote the re-use of parts from end-of-life vehicles and meet the diversified needs of customers. With transmissions newly added to the list of re-manufactured parts in 2005, the number of re-manufactured parts items has been steadily increasing.

Changes in the shipments of re-manufactured parts, including re-manufactured engines (with the corresponding figures for the July to September 2003 period as a base of 100%)



■ Complying with Recycling-related Laws, Regulations and Voluntary Restraints

Isuzu disposes of ASR in compliance with the Automobile Recycling Law, as a member of ART[2]. It is also continuously recycling fluorocarbons and air bags. The recycling rate in fiscal 2005 was far above the standard values.

With regard to environmental impact substances, harmful substances such as lead, mercury, hexavalent chromium and cadmium, we act in accordance with the EU Directive on ELVs. As for truck bodies, we are cooperating with the Japan Automobile Manufacturers Association to facilitate proper treatment and recycling by providing information on waste disposers. Efforts are also being made to cut the usage of four environmental impact substances—lead, mercury, hexavalent chromium and cadmium—in truck bodies, as well as in vehicles.

Items	Recycling rate[3]	Standards values[4]
ASR	65.7%	More than 30% (FY 2005–2009)
Air bag	93.6%	More than 85%

1. ASR: Automobile Shredder Residue
2. ART: Automobile Shredder Residue Recycling Promotion Team consisting of Isuzu and 10 other auto manufacturers to recycle shredder dust properly, smoothly, and efficiently.
3. Amount considered thermal-recycled or material recycled /Input
4. Standard values set by the Automobile Recycling Law

Building Environmentally Friendly Plants

Four key issues for building plants that are kind to the environment and community.

■ Isuzu's Approach to Building Environmentally Friendly Plants

Vehicle production impacts the environment across a wide range, from local communities to the earth. Under our plant management philosophy *Think Globally, Act Locally*, the Plant Environmental Committee leads us in tackling four key issues aimed at ideal production plants.

To make our plants friendly to their local communities too, we work with our affiliate companies, as well as Group companies at home and abroad.

Environmentally- and Community-friendly Plants

- Preventing global warming/reducing CO_2
- Creating a recycling society/reducing waste
- Realizing a society free from contamination by reducing environmental impact substances
- Activating environmental management/ complying with environmental regulations

<Chairperson's Message> Environmentally-sound plant management

Naotoshi Tsutsumi
Director and the Chairperson of the Plant Environmental Committee

Creating Production Sites Friendly to People

Isuzu believes that good products are produced in a clean and comfortable work environment that is friendly to people. Accordingly, each of our employees is environmentally aware, helps facilities to operate efficiently, and steadily follows basic activities such as reducing waste and oil leaks.

Building environmentally friendly plants starts with creating production sites friendly to people.

Ideal Production Plants to be Handed Over to the Next Generation

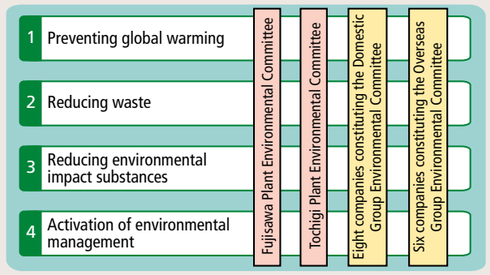
Production activities need facilities and consume materials and energy. So, if production is completed using the minimum amount of energy, this should greatly help preserve the environment and prevent global warming.

Among other automobile manufactures, Isuzu is a pioneer in raising its economic efficiency and optimizing use of energy in production processes, including the prevention of idle production lines. Our environmental preservation activities, such as energy-saving measures, will lead us to making a social contribution and fulfilling our social responsibility. I also believe Isuzu's activities will help us hand over a better global environment to the next generation.

Activities of the Plant Environmental Committee

Isuzu has been promoting conservation activity in the plant environment with: *fostering of employees*, *global* and *cross-functional*, as key words.

Activities of the Plant Environmental Committee



Key Issues and Final Goals in Building environmentally friendly Plants (Long-Term Goals)

Issue	Final goal
Preventing global warming/saving energy & Reducing CO_2	Energy-saving plants that contribute to global warming prevention
Reducing waste/promoting recycling	Plants that promote zero emission to contribute to creating a recycling society
Reducing environmental-load substances	Plants that promote production activities with lower environmental-load and are friendly to local communities
Activation of environment management	Aiming at building plants friendly to the environment by actively promoting environment management

■ Efforts to Reduce CO_2 Emissions

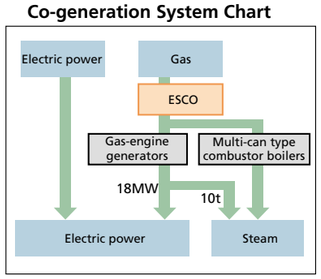
Isuzu has been striving to reduce CO_2 emissions and thus prevent global warming. While the goal of our global activity is to reduce the amount of CO_2 emissions of fiscal 1990 by 30% by fiscal 2010, we have already achieved a reduction of more than 50%. Emissions in fiscal 2005 were 190,000 tons, which was a reduction of 8.7% over our planned 3.8% reduction, compared to the previous year.

Our major initiatives include the introduction of co-generation, flexible response to energy demand through the use of multi-can type combustor boilers, implementation of an energy saving patrol by the Energy Conservation Committee, and the integration of painting shops.

Introduction of the Co-generation System

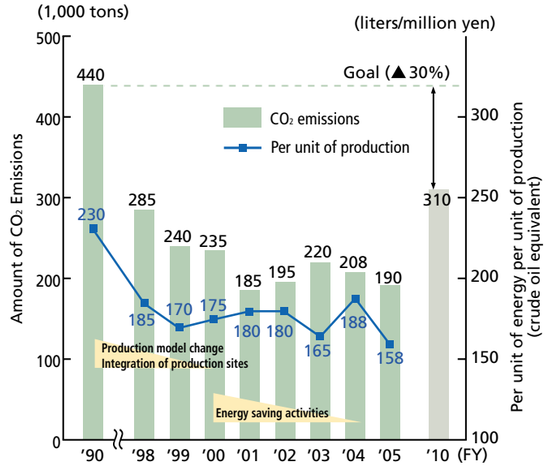
The Fujisawa Plant has introduced a gas-engine type co-generation and has constructed a thermal electric energy system, based on multi-can type combustor boilers, by means of the ESCO* (Energy Service Company) method, which started operation in February 2006. This allowed us to reduce environmental loads and energy costs. This system is expected to reduce CO_2 emissions by 1,600 tons annually.

Co-generation System Chart



*ESCO: A service operation that provides a comprehensive set of technologies, facilities, manpower and capital necessary for saving energy

Change in the Amount of CO_2 Emissions



Gas-engine generator

Multi-can type combustor boilers

Activities of the Energy Conservation Committee

Isuzu's plants are striving to build environmental awareness in all staff, and each plant is implementing independent energy saving activities, mainly the energy saving patrol. Focusing on the energy loss generated while the production lines are idling, the energy saving patrol identifies machines operating during lunch breaks, after closing time and on holidays, to review whether their operation is truly required.

For example, the achievements in Fujisawa Plant include the reduction of electric energy usage by 5% in 2005, as a result of in-depth checking of the operating status of machinery, air conditioners, ventilation facilities, lightings and air leaks.

Energy Conservation Committee members standing by for patrolling

Promoting energy saving activities through the establishment of an in-house award system

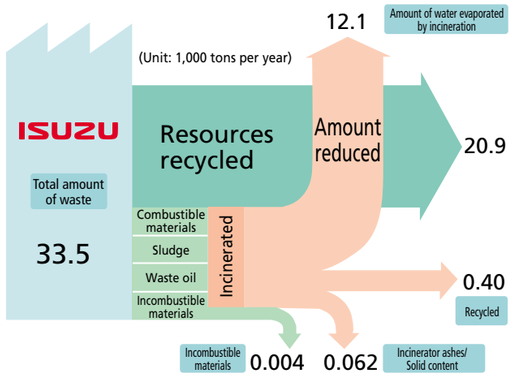
■ Reduction of Waste and Efficient Use of Resources

Zero emission

Isuzu defined "Zero Emission" as "a 95% reduction in the amount of landfill disposal of industrial waste, compared to that in fiscal 1995, by the end of fiscal 2001 (excluding incinerated ashes)," and actively promoted waste reduction activities. As a result, we achieved Zero Emission in fiscal 2001, with a reduction of 97.6%.

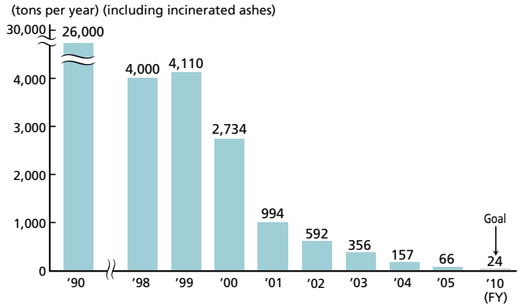
We newly set a challenging goal of: "Lowering the amount of landfill disposal of waste per plant to one ton or lower per month by the end of 2005 (including incinerator ashes)," and achieved this goal in October 2005. Moreover, we continued to work on building a recycling system for incinerator ash in fiscal 2005 and succeeded in reducing the final amount of industrial waste to 66 tons.

Outline of Waste Disposal (Achievement in Fiscal 2005)



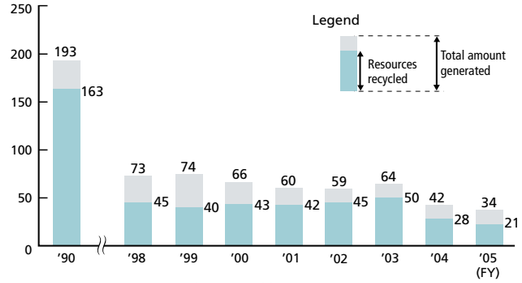
Changes in the Final Amount of Industrial Waste

(tons per year) (including incinerated ashes)



Changes in the amount of waste generated and the amount of resources recycled

(1,000 tons per year)



Major examples of our efforts

- Active promotion of separate collection; recycling of resources through decomposition and scrapping
- Campaign for reducing the amount of waste/incineration and packaging wood
- Recycling of incinerator ashes
- Joint environmental declaration with waste operators, construction of a Zero Emission Network, etc.

Material Balance in Production Plants (the Amount of Input and Output of Resources)

Input

- **Energy consumption** 114, 000Kℓ (Electric power 69%, Gas 25%, Petroleum 6%)
- **Amount of material used**
  - Metal material (Steel 415,000 tons, Aluminum 40,900 tons)
  - Chemicals 3,800 tons
- **Amount of water used** 2.22 mil. m³

ISUZU Production plants

Output

- **Products produced** 917.9 bil. yen (Domestic use: 99,231 units, Exported: 120,677 units)
- **Atmosphere** • CO_2: 190,000 tons • NOx: 46 tons • SOx: 15 tons
- **Waste** • Total amount generated 33,500 tons (Recycled: 21,300 tons, Landfilled: 66 tons, Others: 12,100 tons)
- **Water emission** 1.95 mil. m³
- **Amount of COD* load** 23.2 tons

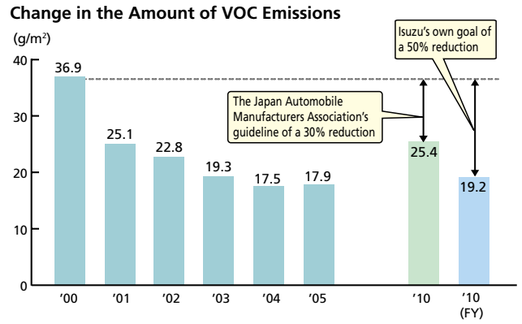
* COD: Chemical Oxygen Demand

■ Reduction of Environmental Impact Substances and Compliance with Regulations

Reducing Volatile Organic Compounds (VOC)

Emissions of VOC, which are a cause of optical chemical oxidant, are restricted in the amended Air Pollution Control Law, implemented in April 2006. Isuzu has been promoting the reduction of organic solvent used in the painting process since before the enforcement of the amended law. It set a goal of achieving a level of 19.2g/m², which is stricter than that of the Japan Automobile Manufacturers Association, and strived for improvement by reducing the use of paint solvents, collecting cleaning thinners, adopting advanced paint application equipment, and using dry furnace with exhaust gas combustion equipment. As a result, the VOC emissions level in fiscal 2005 was 17.9g/m², thus achieving the goal earlier than the target date.

Change in the Amount of VOC Emissions



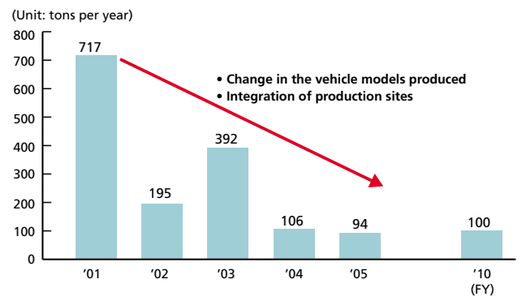
Chemical Substance Management and Response to the PRTR Law

In addition to the regulatory restrictions, Isuzu has established an internal regulation of: *Management rule for controlled substances*. The rule classifies chemical substances into three categories: "prohibited," "conditionally available," and "available" (caution needed), in order to implement proper management and reduction in usage. In response to the PRTR Law, we have designed a chemical substance management system that links purchase management information with the PRTR system. We have thus made efforts to understand, manage and reduce the targeted substances, which led to a reduction of 13% over the previous year in the amount of emissions in fiscal 2005.

* PRTR (Pollutant Release and Transfer Register) Law: Law concerning the understanding of the effects of specific chemical substance emissions on the environment and the promotion of improved management.

Change in the Amount of the Target Substances of PRTR

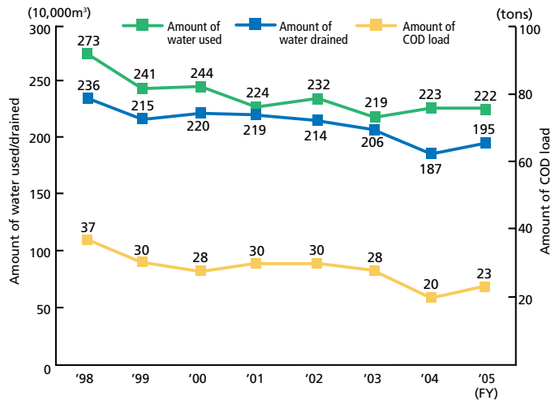
(Unit: tons per year)



■ Prevention of Air/Water Pollution and Compliance with Regulations

Isuzu regards the prevention of air and water pollution as the first step of environmental preservation activities and has established its own standards, stricter than those of laws and regulations, to constantly monitor drainage and emissions. The status of management and compliance with laws and regulations are reported to the Plant Environmental Committee for proper application and management within the environmental management system.

Changes in the Amount of Water Used/Drained and the Amount of COD Load



Preventing Dioxin Emissions

Tochigi Plant suspended the use of its incinerator in 2002 and has since been committed to the disposal of waste through its contractors. Fujisawa Plant uses an incinerator generating 1.02ng-TEQ/m³* of dioxin, which is far lower than the regulated value (10ng-TEQ/m³). We will keep curbing emissions from incinerators through strict combustion control and a reduction of incinerator waste volume.

* ng: nanogram. A unit representing one one-billionth of a gram
TEQ: Toxic Equivalents Quantity

Prevention of Soil and Groundwater Contamination

Isuzu formerly used three chlorine organic solvent* substances but has already terminated their use. We have independently been studying their effects on soil and groundwater in plant/office sites since 1996, to confirm that no contamination spreads outside our premises from polluted areas. We have also taken measures to purify the polluted areas and have reported the results to public administrators.

* Three substances: trichloroethylene, 1-1-1 trichloroethane and dichloromethane

Site Data

Given below are the typical major emission indicators for air, water and PRTR at the Fujisawa and Tochigi Plants.

■ Fujisawa Plant Address: 8 Tsuchidana, Fujisawa-shi, Kanagawa, Japan

PRTR

(Unit: kg)

No.	Chemical substance	Amount handled	Amount of emission					Amount transferred
			Emission to air	Emission to public waters	Emission to soil	Landfill	Total emissions	Total amount transferred
40	Ethylbenzene	32,000	15,000				15,000	6
43	Ethylene glycol	640,000						600
63	Xylene	63,000	41,000				41,000	9
176	Organic tin compound	4,300						170
224	1,3,5-trimethylbenzene	2,800	2,100				2,100	0
227	Toluene	23,000	6,900				6,900	47
179	Dioxin		47*				47*	6,600*

* mg-TEQ

Air quality

Item	Facility	Regulated value	Actual measurement	
			Maximum	Average
NOx (ppm)	Boiler	60**	20	18
	Incinerator	150	76	70
	Metal smelting furnace	200	36	29
	Heat-treating furnace	200	190	170
	Paint/drying furnace	230	22	18
Dust (g/Nm³)	Boiler	0.1	0.0066	0.0035
	Incinerator	0.15	0.14	0.13
	Metal smelting furnace	0.2	0.18	0.1
	Heat-treating furnace	0.2	0.023	0.014
	Paint/drying furnace	0.1	0.004	0.002
Sox (Nm³/h)	(Total amount regulation)	21.82	1.63	0.97

* As for the regulated value, either the Air Pollution Control Law or the prefectural ordinance, whichever is stricter, is adopted.
**The change in the regulated value of the boiler is due to the change in fuel type (from diesel oil to gas).

Water quality

(Discharged to Hikichi River)

Item		Regulated value	Actual measurement		
			Maximum	Minimum	Average
pH		5.8–8.6	7.9	7.3	7.7
COD	mg/l	60	16	5	11.8
BOD	mg/l	60	11	5	7.2
SS	mg/l	90	12	less than 5	5.6
Oil content	mg/l	5	2.2	1	1.3

* As for the regulated value, either the Water Pollution Control Law or the prefectural ordinance, whichever is stricter, is adopted.

- No environmental accidents
- Environmental claims: one

A neighboring resident claimed on March 8, 2006 that a tree fell down outside the border of the plant, near the east gate. The fallen tree, caused by decayed roots, was properly removed, the broken fence was mended and the claim was resolved.

■ Tochigi Plant Address: 2691 Oaza Hakuchu, Ohira-machi, Shimotsuga-gun, Tochigi, Japan

PRTR

(Unit: kg)

No.	Chemical substance	Amount handled	Amount of emission					Amount transferred
			Emission to air	Emission to public waters	Emission to soil	Landfill	Total emissions	Total amount transferred
40	Ethylbenzene	9,000	8,500				8,500	
43	Ethylene glycol	51,000	480				480	50,000
44	EG monoethyl ether	1,800	1,800				1,800	
63	Xylene	13,000	11,000				11,000	
224	1,3,5-trimethylbenzene	1,100	1,100				1,100	
227	Toluene	8,600	5,200				5,200	
309	poly(oxyethylene) nonyl phenyl ether	1,400	170				170	

Air quality

Item	Facility	Regulated value	Actual measurement	
			Maximum	Average
NOx (ppm)	Boiler	250 and lower	100	72
	Metal heating furnace	180 and lower	130	48
Dust (g/Nm³)	Boiler	0.3 and lower	0.008	0.003
	Metal heating furnace	0.25 and lower	0.006	0.002
Sox (Nm³ /h)	(Total amount regulation)	17.5	0.78	0.074

* As for the regulated value, either the Air Pollution Control Law or the prefectural ordinance, whichever is stricter, is adopted.

Water quality

(Discharged to Nagano River)

Item		Regulated value	Actual measurement		
			Maximum	Minimum	Average
pH		5.8–8.6	7.5	6.8	7.2
COD	mg/l	20	18.3	8.9	13.0
BOD	mg/l	20	17.6	3.4	9.4
SS	mg/l	40	9.0	0.0	5.3
Oil content	mg/l	5	0.6	0.0	0.1

- No environmental accidents
- No environmental claims

* As for the regulated value, either the Water Pollution Control Law or the prefectural ordinance, whichever is stricter, is adopted.

Notes:
1) Period covered: FY2005, which runs from April 2005 to March 2006
2) The regulated values represent the strictest numeric values of those specified in environmental laws and regulations, ordinances and pollution prevention agreements.
3) Abbreviations: PRTR: Pollutant Release and Transfer Register Law/COD: Chemical Oxygen Demand/BOD: Biochemical Oxygen Demand/SS: Suspended Solids in water.

Consolidated Environmental Activities in Production

Isuzu has been promoting environmental preservation activities, together with eight domestic and six overseas consolidated group companies.

■ Environmental Preservation Activities of the Domestic Consolidated Group Companies

The companies are striving to achieve the goals set for fiscal 2010, which focus on three key issues: global warming prevention, waste reduction, and environmental impact substance reduction.

* The eight domestic consolidated companies are: Isuzu Castec Corporation/Automobile Foundry Co., Ltd./TDF Corporation/J-Bus Ltd./Jidosha Buhin Kogyo Co., Ltd./Nippon Fruehauf Co., Ltd./Shonan Unitec Ltd./Isuzu Engine Manufacturing Hokkaido Corporation.

1. Change in the Amount of CO_2 Emissions

(Unit: 1,000 tons)

Fiscal year	2003	2004	2005	Goal for 2006	Goal for 2010
Isuzu, non-consolidated	202	207	190	188	190
Eight consolidated companies	125	134	143	140	128
Total of nine consolidated companies	327	341	333	328	318 *

* Goal: Reduction by 35% or more from fiscal 1990 level

2. Change in the Amount of Landfill Waste

(Unit: 1,000 tons)

Fiscal year	2003	2004	2005	Goal for 2006	Goal for 2010
Isuzu, non-consolidated	349	157	66	24	24
Eight consolidated companies	8,639	9,231	5,706	5,545	4,743
Total of nine consolidated companies	8,988	9,388	5,771	5,569	4,767 *

* Goal: Reduction by 50% or more from fiscal 2004 level

3. Change in the Amount of PRTR Emissions

(Unit: 1,000 tons)

Fiscal year	2003	2004	2005	Goal for 2006	Goal for 2010
Isuzu, non-consolidated	239	108	94	105	100
Eight consolidated companies	258	258	276	261	245
Total of nine consolidated companies	497	366	370	366	345 *

* Goal: Reduction by 30% or more from fiscal 2003 level. Fiscal year 2003 is the year in which the amount to be reported was changed from five tons or more to one ton or more.

Isuzu Engine Plant Received the First Hokkaido Zero Emission Award

In March 2006, Isuzu Engine Manufacturing Hokkaido Corporation, a production company that processes and assembles engines, was granted the First Hokkaido Zero Emission Award for its commendable waste recycling activities. The committee praised the company's independent activities for waste recycling. (The photo shows Plant Manager Sato receiving the diploma from the Governor of Hokkaido.)

■ Environmental Preservation Activities of Overseas Consolidated Group Companies

The First Global Plant Environmental Meeting was held in November 2005 in Thailand. Representatives from Isuzu and six overseas affiliate companies gathered to discuss the environmental preservation activities and key issues, including global warming prevention.

* Six overseas affiliated companies: IMCT: Isuzu Motors Co., (Thailand) Ltd./IEMT: Isuzu Engine Manufacturing Co., (Thailand) Ltd./TID: Thai International Die Making Co., Ltd./ITF: IT Forging (Thailand) CO., Ltd./ISPOL: Isuzu Motors Polska Sp.zo.o. (Poland)/DMAX, Ltd. (USA).

Global Environmental Meeting

Members visiting a local plant

Visiting a water treatment facility

Environmental staff of IMCT

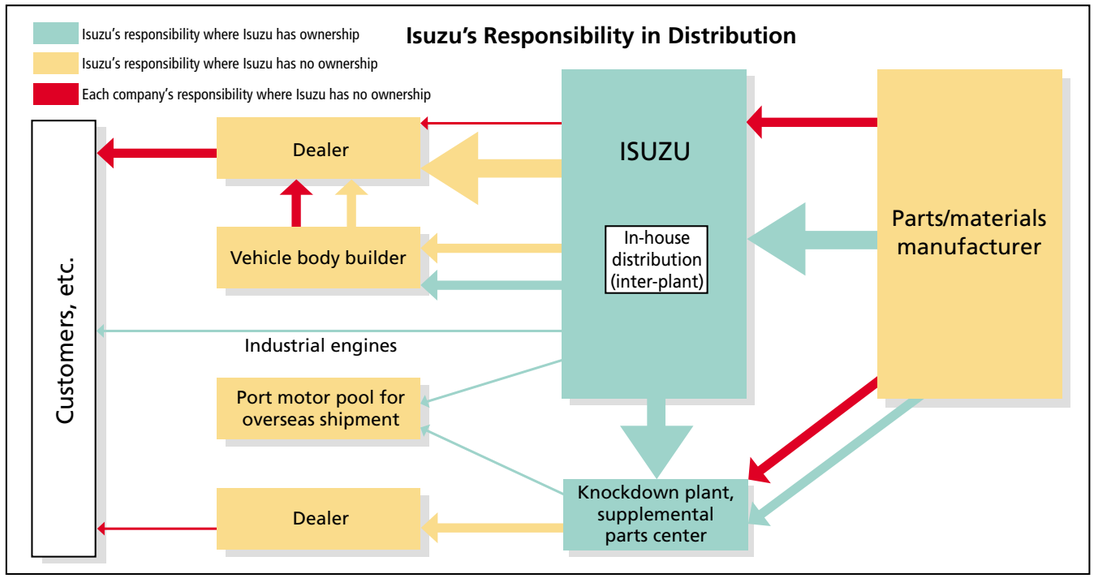
Environmental Measures in Distribution

We are reducing CO_2 emissions through the improvement of transport efficiency in each area of distribution and training on eco-driving, while establishing an organization in response to the newlyenforced amended Energy Saving Law, and promoting compliance with the law.

■ Responses to the Amended Energy Saving Law

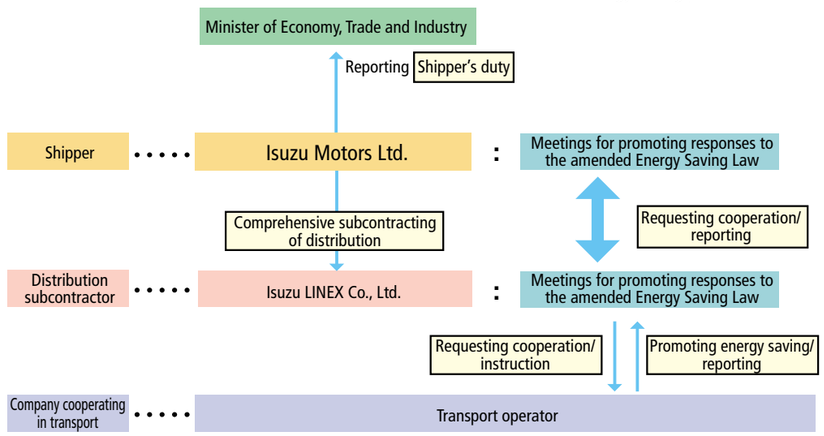
Defining the Scope of Responsibility

We are promoting energy saving in distribution as part of Isuzu's responsibility, including the coverage of freight transportation, by which we have been trying to improve the transportation efficiency of those of which Isuzu has no ownership, in addition to the coverage of freight transportation of those of which Isuzu has ownership.



Organization

Led by the chairperson of the Sales/Servicing Environment Committee of the Isuzu Global Environment Committee, we are holding meetings on measures to respond to the amended Energy Saving Law. In those meetings, we set guidelines and goals for our measures, to control the progress and report to the government. Furthermore, in cooperation with our distribution sub-contractors, we are holding monthly meetings to respond to the amended Energy Saving Law, to promote specific measures such as examining measuring methods according to the amended Energy Saving Law, for improvement in calculation accuracy and the development and implementation of energy saving plans.



Shipper's duty
- Reduction of the amount of energy used, by 1% or more per year
- Reporting of transport performance in tons/kilometers
- Reporting of the reduction plan and energy performance

Tasks of Isuzu Motors
- Determination of guidelines for measures
- Definition of the coverage
- Development of energy reduction plans
- Progress management

Tasks of Isuzu LINEX
- Identification of ton-kilometers
- Identification of the achievements of the amount of energy used
- Development and implementation of energy reduction plans
- Progress management

Measurement Results According to the Amended Energy Saving Law

Estimating from the transport performance in April and May 2006 (approx. 53 million ton-kilometers), the annual transport volume of Isuzu would be about 300 million ton-kilometers, and Isuzu falls under the category of special shippers. Accordingly, we are aiming to reduce transport volume by more than 1% a year, by developing a reduction plan in the next year, as well as by assessing volume in ton-kilometers and energy savings using a method that conforms to regulations.

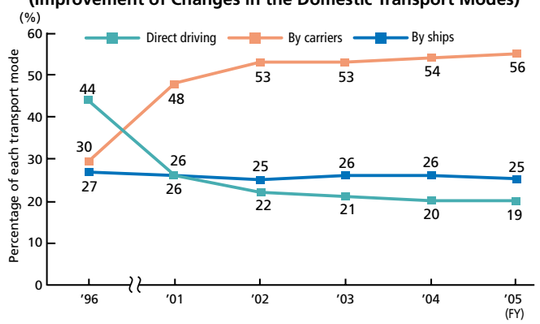
	Transport category	April 2006	May 2006	Subtotal	Annual estimate
Transport volume (ton-kilometers)	Product vehicle	12,389,174	11,001,374	23,390,548	140,343,288
	Production procurement	10,504,779	11,490,283	21,995,062	131,970,372
	Supplemental parts	2,914,094	2,836,106	5,750,200	34,501,200
	KD parts/ Components	717,465	860,060	1,577,525	9,465,150
	Subtotal	26,525,512	26,187,823	52,713,335	316,280,010
Energy (GJ)	Product vehicle	17,931	16,595	34,526	207,156
	Production procurement	18,151	19,887	38,038	228,228
	Supplemental parts	6,250	6,051	12,301	73,806
	KD parts/ Components	1,154	1,383	2,537	15,222
	Subtotal	43,486	43,916	87,402	524,412

■ Reduction of CO_2 Emissions through Energy Saving Activities in Distribution

Improvement of the Transportation Mode

In order to reduce exhaust gases and CO_2 generated while transporting vehicles, we are promoting a shift from the conventional transport mode of directly driving vehicles, to using carriers and ships instead. In particular, as a result of setting regular routes to improve the carrier use rate, the volume of transport by directly driving vehicles was reduced to 19% overall in FY2005.

Transport of Vehicles (Improvement of Changes in the Domestic Transport Modes)

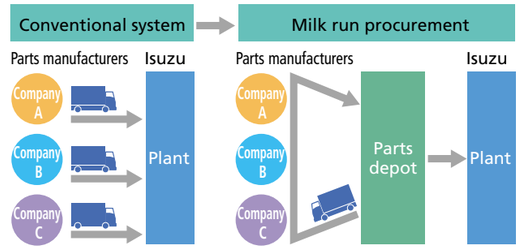


Improvement of Loading Efficiency

Transport energy can be considerably reduced by improving the loading efficiency. Isuzu is promoting efficient operation by the milk run system, used in procurement distribution since 1995, to reduce the number of vehicles for efficient traveling. Isuzu was the first automobile manufacturer to adopt this system. In FY1995, the ratio of transport by this system accounted for only 18%, but in FY2005 70% of the transported volume, from parts manufacturers to Isuzu plants, adopted this system.

The Isuzu Group has also been striving to further reduce exhaust gases and CO_2 by directly transporting vehicles completed in plants to dealers and vehicle body builders, instead of moving them to storage yards. The direct transport volume reached as high as 76% in FY2005.

Isuzu's Milk Run Procurement



Promoting Eco-driving

Isuzu has been holding eco-driving seminars every year for transport operators. We are also inviting suppliers that transport Isuzu's parts to these seminars. In FY2005, 19 employees from 16 companies participated in seminars.

In addition, we are asking transport operators to promote energy-saving driving by using *Mimamori-kun*.

Promoting the Use of Containers and Returnable Cases for Packaging

In the process of parts transportation from our knockdown plants to 97 countries for local production overseas, we are trying to be environmentally friendly by reducing the volume of wood used for packages and packing materials for overseas shipment. For these purposes, we are actively promoting transport in containers. Furthermore, we are shifting to returnable and steel cases from wooden boxes. In FY2005, we achieved a 100% record for transport in containers, and 89% in the use of returnable and steel cases.

Relationship with Customers

We receive various feedback from our customers through our Customer Center and other communication channels. This feedback is shared among our group companies and is reflected in our products and services.

■ Enhancing Product Reliability and Safety

Reliability and safety are the most important key words with commercial vehicles. At Isuzu, quality always comes first to ensure product reliability and safety. With rigorous quality standards, complete quality control is implemented in all stages of vehicle development, production and marketing. In the event of accidents, our engineers team up with specialists to investigate their causes fully from diverse viewpoints, and endeavor to insure quality and safety. When necessary, we are prepared for a quick response to any product recall.

All quality-related information is shared at Isuzu, from the top management down and by all dealers. We share customer opinions among the group companies as valuable suggestions, and try to improve product quality by reflecting such information in the development of products and services.

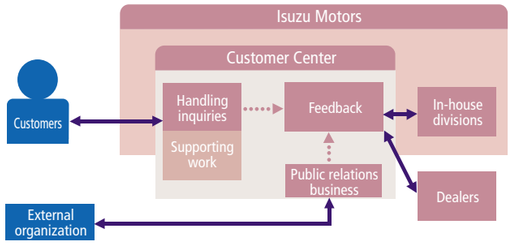
■ Isuzu Customer Center

The customer center is available for customers' inquiries and comments about our products. In fiscal 2005, we received about 15,000 customer comments and enquiries through our toll-free phone service and e-mails. All these comments and inquiries are shared among our group companies and are reflected in their product development and business activities.

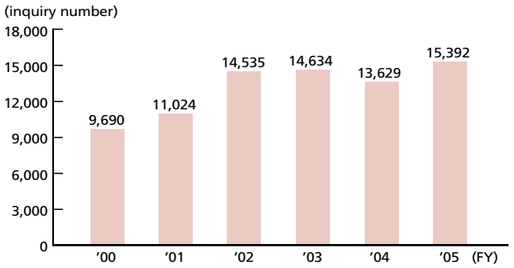
In fiscal 2005, we received various inquiries about asbestos. At Isuzu, we have set up a special team to handle asbestos issues and we do our best to offer prompt disclosure by centralizing information. In connection with the revised Energy Saving Law that came into force in April 2006, we also received inquiries from customers about whether the revised law would affect their business operation and what they need to do to meet the law's requirements.

Answers to frequently asked questions are posted on our website for customer convenience. We would like to respond to our customers' various comments as quickly as possible.

Customer Center Business Flow Chart



Changes in Inquiry Numbers



■ Zero Road Accident Campaign

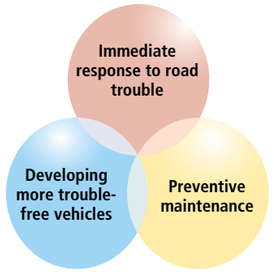
As one of its aftercare programs, Isuzu is running a zero road accident campaign at all domestic dealers. This activity is designed to prevent road trouble by making a round check of vehicles as preventive inspection and maintenance service. Vehicles are inspected mainly for possible road trouble when they are brought into dealership service shops.

We have also started a customer visiting service to conduct on-site inspections for customers who can not take their vehicles to dealers for regular services due to a lack of time, and who suffer from road trouble. This service was first started at some dealerships in December 2005 and is being expanded nationally.

When road trouble occurs, the *Ohayaku* Center* will contact the nearest dealer for round-the-clock services, such as making emergency repairs to a vehicle or arranging for a tow-in service. The service personnel will later explain the details of the trouble to the customer and suggest additional repairs where necessary, with the related trouble information being fed back into our future product development.

* *Ohayaku* Center: A support center with operators on standby, 24 hours per day, 365 days per year, to answer emergency calls about road trouble or traffic accidents (daytime calls on weekdays will be transferred to the nearest dealer).

Three Mainstays of Our Zero Road Trouble Campaign



Zero Road Accident Campaign Symbol

A snail is the character mascot to symbolize the slogan: *Don't rush, drive slowly*. The shell represents a truck body and tires.

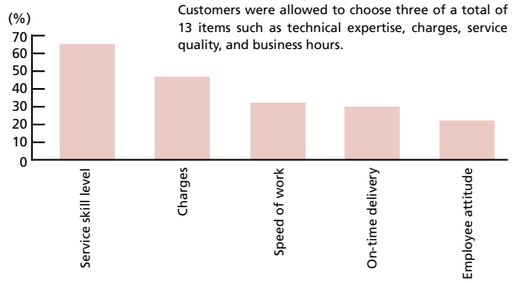
■ Customer Satisfaction Survey with Isuzu Dealers

Isuzu dealers aim to be attractive service plants. In order to make a quantitative analysis of our customers' evaluation of dealer activities, to raise employees' awareness of services, and to accelerate future improvement campaigns, they conducted a survey of customer satisfaction with dealers by sending out questionnaires to about 56,000 customers who brought their vehicles into a dealership workshop. A total of 7,300 responses were received.

Such customer input will be used to build attractive service plants. We plan to continue these surveys.

Factors Influencing the Choice of Service Plants

* The graph shows the top five items that customers consider most important for dealer selection. Customers were allowed to choose three of a total of 13 items such as technical expertise, charges, service quality, and business hours.



■ Domestic Training Sessions

Isuzu Transport Strategies Seminars

Isuzu holds transport strategy seminars every year as part of its programs to support customers in their efforts to improve management efficiency, cut vehicle operation costs, and ensure safety. Besides lectures by specialists on trends and management strategies in the distribution industry, we give fuel-efficient driving sessions and demonstrations on safe driving, to help customers improve their management efficiency.

Isuzu Seminar to Reduce Delivery-vehicle Accidents

This seminar is held annually for customers in the delivery business to help reduce traffic accidents and strengthen safety measures. We ran the workshop at four venues across the country in 2005.

Seminar on delivery-vehicle accident reduction

■ Services for Overseas Customers

Overseas Service Clinics

We are holding service clinic programs to inspect customers' vehicles free of charge and respond to their various inquiries about vehicles, including maintenance. In 2005, the service personnel from Isuzu participated in such clinics held by dealers in Oman, Malaysia, Barbados, Trinidad and Tobago, and inspected customers' vehicles. The clinics are popular among customers and give us the opportunity to diagnose customers' vehicles and to hear their opinions. Customer feedback is helpful with the education of those in charge of product development and customer service.

Service clinic

Free Vehicle Inspection Campaign in the Philippines

Isuzu Philippines Corporation (IPC) conducts an annual free vehicle inspection service on the highway roadside during mid-April, the country's Lenten and summer season. The service is provided not only to Isuzu vehicles, but also those of other brands. The professionals from IPC in charge of service and parts inspect vehicles, do minor repairs, and advise the maintenance.

Free inspection

Seminars on Fuel Efficient Driving

We held seminars on fuel efficient driving in Japan and abroad for overseas dealers and principal users, for environmental protection and safety on a global scale. In October 2005, we conducted a seminar and driving session in Hokkaido for 22 distributors and fleet users from Thailand, Indonesia, Malaysia and the Philippines, on the logistics integration, fuel efficiency and safe driving. The event was well-received by the participants. We held similar workshops in Australia and Vietnam with the support of the Isuzu head office.

Fuel efficient driving seminar in Japan

Relationship with Local Communities

Isuzu, as a Leading Global Company, has good communications with people in local communities, both in Japan and abroad.

■ Environmental Communication at Domestic Plants

Isuzu is working to build environmentally friendly plants and at the same time wants to make such plants open to local communities to foster good communications with the residents. The following are some of the activities that are currently underway at the plants.

Fujisawa Environmental Fair

Fujisawa Plant is actively participating in environmental events in local communities. Following its participation in the first municipal environmental fair, the plant has been demonstrating Isuzu's environmental activities by exhibiting low-pollution vehicles and display panels. The volunteer work, initially launched by a few people, has now grown into one of the most important activities connected with the municipal office and the local community.

Vehicle exhibition

Briefing to visitors

Eco-commuting Contributes to Environmental Conservation and Easing Traffic Congestion

Isuzu has been encouraging eco-commuting for its employees as part of its Team Minus 6% campaign. This is one of the environmental preservation initiatives that can easily be fulfilled by anyone who chooses to use a public transport system or walk, instead of driving to work. In recent years, there have been an increasing number of employees who practice eco-commuting. They walk from the nearest railway station to their workplace.

This activity contributes to global environmental preservation efforts, such as the prevention of global warming. It also helps curb air pollution in the local community and eases traffic jams. In addition, eco-commuting is effective in preventing lifestyle-related diseases and promoting health.

Eco-commuting

Isuzu Summer Festivals

At Fujisawa Plant, the summer festival, a community fun event open to local residents, was revived in 2005 for the first time in six years. The festival had many families and couples from the community who enjoyed a stage show, procession of a portable shrine, snack stands and fireworks, We plan to make the festival an annual event for community people.

Fujisawa Plant crowded with community people

At Tochigi Plant, too, a similar summer festival was revived. About 1,500 people, including local residents and employees' families, came to the festival. They all enjoyed the event and were excited to see the 200 fireworks marking the end of the festival. We asked the visitors to separate and collect rubbish.

Tochigi Plant: Children happy at night stalls

Cleaning Community Areas

At Fujisawa and Tochigi Plant, employees regularly clean up the surrounding areas to help build a comfortable town and to be a community-friendly plant.

Cleaning the area of the railway station

Cooperation with Welfare Facilities Continues

Tochigi Plant is cooperating with the welfare facilities in the community in their efforts to utilize elderly persons with special skills, and rehabilitate the physically disadvantaged. It will continue to cooperate with these welfare facilities, for instance, by providing empty cans collected, and asking those involved to clean the safety shoes and temporary worker

A worker at a welfare facility

■ Overseas Communication Activities

Educational and Welfare Activities in Poland

Isuzu Motors Polska (ISPOL) contributes to student computer education by donating unused computers to local primary and middle schools. In December every year, ISPOL invites children in welfare facilities and employees' children to a theater in Tychy, where the plant is located, and holds a Christmas event such as presenting a play of Santa Claus.

Christmas event

Nature Protection Activities in the Philippines

Isuzu Philippines Corporation (IPC) has been engaged in various social contribution activities since 2002. In an effort to fulfill its social responsibility as an automobile manufacturer, IPC planted trees for nature protection in 2005. It also donated a total of 15,000 narra seedlings to help create a forest zone in Quezon Province on the Southern Luzon, where typhoons frequently cause mudslide disasters.

15,000 narra seedlings donated as part of tree-planting campaign

Medical Project in Turkey

Anadolu group, a parent company to which Anadolu Isuzu Otomotiv Sanayi (AIOS) belongs, created an Anadolu Fund for Education and Society, and has been conducting social contribution activities in various fields. Anadolu Health Center, a general hospital that boasts Turkey's best facilities and medical technology, was established to promote the health of the nation, under the Anadolu Health Village project. The health center offers excellent medical service in alliance with Johns Hopkins Hospital in USA. It also conducts free medical checkups for low income earners. AIOS donated $1.3 million to the fund in 2005.

Anadolu Health Center

Environmental Awareness Campaign in Vietnam

Isuzu Vietnam Corporation (IVC) regularly holds a contest to improve energy-efficient driving techniques and showcase the environmental and economic performance of diesel engines. In 2005, IVC sponsored a contest: the Isuzu Diesel Challenge 2005. A total of 50 HIGH-LANDER (utility vehicle for Asian market) owners competed to drive a preset 100km course with the lowest fuel consumption.

Economy Drive Event: Isuzu Diesel Challenge 2005

Supports in Large-scale Disasters

From 2005 through 2006, large-scale disasters occurred around the world, causing enormous human and physical damage. Isuzu and its overseas group companies promptly responded and provided various support, including donations and relief supplies for reconstruction of the devastated areas. Isuzu's disaster relief efforts include assisting victims of: the earthquakes that occurred in the northern part of Pakistan and in central Java, Indonesia; hurricane "Katrina" in North America; and a large-scale landslide that hit Leyte, the Philippines.

Donations and Isuzu president's message being handed to the Pakistani Prime Minister

Communication with Society

To leave a beautiful earth to our descendants, Isuzu is tackling environmental protection positively in society and in local communities.

■ Basic Policy

Isuzu states in its Charter on the Global Environment: *In order to leave a beautiful earth to our descendants, not only through our business activities, but also as citizens of the earth, we will cope proactively with environment conservation activities of localities and society*. To realize what this means, Isuzu is actively working on social contributions through communication with society.

■ Participation in Events and Exhibitions

Awarded Transport Minister's Prize of Eco-Products Awards

We exhibited an ELF CNG-MPI truck and the *Mimamori-kun* advanced vehicle diagnostic and information system at the Eco-Products 2005 exhibition. The *Mimamori-kun* was awarded the Transport Minister's Prize.

Primary school students visiting Eco-Products

Participation in the Eco-Car Campaign in Kyoto

We declared our efforts to promote the use of eco-cars in the Top Runner Declaration in the Kyoto Eco-Car Campaign, a project run by the council for the promotion of green delivery in the center of Kyoto.

Declaration of eco-car promotion

Promotion of CNG Trucks

We displayed our CNG trucks at almost 40 in 2005 events to show its environmental performance. An Isuzu CNG vehicle was used as a camera-equipped truck in the Tokyo International Women's Marathon.

A camera-equipped ELF CNG-MPI truck

Major Events

May 2005	Low-pollution Vehicle Fair 2005 in Nagoya
June 2005	Eco-Car World 2005
July 2005	Nishinomiya City CNG Vehicle Festival
September 2005	Natural Gas Vehicle Show/ Low-pollution Vehicle Seminar Hiroshima
October 2005	Tokyo Truck Show/Fujisawa City Industrial Exhibition
November 2005	The 14th Nagoya Motor Show/Low-pollution Vehicle Promotion Forum (Osaka)
December 2005	Eco-Products 2005

■ Social Contribution

Joining National Antarctic Research Expeditions

Isuzu has sent company engineers to the Antarctic research base, beginning with the first expedition in 1956, through the 46th expedition in 2005 consecutively. Assigned to the machinery section of the base construction team, they are in charge of maintenance and control of the base, as well as the operation and safety control of the research expedition.

On the Antarctic, the research team makes observations of ozone layers and analyzes data relating to global warming. Isuzu vehicles and diesel engines for power generation and snowmobiles have been supporting these missions, and preserving the lives of the research team.

A crane powered by Isuzu diesel

Participating in the 46th Antarctic Research Expedition

—By Mitsuaki Shuto, a Member of the Expedition—

In the Antarctic, the meteorological conditions change every year and the previous experience of over-wintering does not always help us. Fighting the snows and winds to maintain and operate the research base, I had to stay alert around the clock as an engineer.

My best memory is that I could manage to repair disabled heavy machinery and vehicles without regular parts. Under pressure of daily work, the beautiful aurora and natural phenomena of the Antarctic always gave me a peace of mind.

Mr. Shuto at work

■ Environment-related Pages on Isuzu's Website

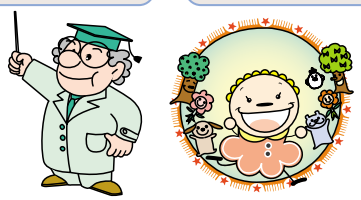
http://www.isuzu.co.jp

Environment station
Back numbers of environmental and social reports plus environmental information on individual vehicles

Isuzu green technology
Advanced automotive technologies, focusing on clean diesel engines

Truck and diesel seminars
Easy-to-understand introduction of the trucks and diesel engines, using illustrations

Energy-efficient driving manual
Detailed explanations of the fuel cost mechanism and tips to improve fuel efficiency



Relationship with Suppliers and Shareholders

Isuzu is working on environmental issues together with our suppliers, both domestic and abroad, while strengthening measures to satisfy shareholders.

■ Relations with Suppliers

Basic Purchasing Policies

Isuzu makes purchases on the following three basic policies:

1. With quality as a first priority, we seek to create and offer products that satisfy customers.
2. We aim to procure domestic or overseas products, under fair competition, if they are satisfactory in quality, pricing and delivery.
3. With customer benefits as a first priority, we act for the benefit of the public and society, for the safety of people's lives, and with respect for human rights.

Major Activities

We hold briefings on our purchasing policies in March every year. In the 2006 briefing, we had 270 suppliers from home and abroad, and requested them to work on the following requirements, in line with our green purchasing policies.

Efforts toward reducing regulated substances

(1) Complying with the EU directive and Japan Automobile Manufacturers Association's voluntary restraints: Phased reduction in four regulated substances/reduction in VOC[1] in vehicles

(2) Development of substitutes for regulated substances

(3) Continuation of data collection using a regulated substance management system (IMDS[2])

Briefing on purchasing policies

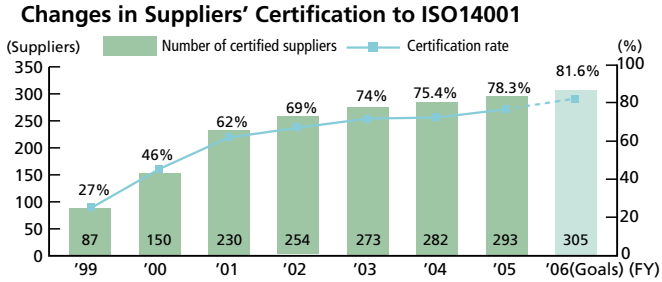
1. VOC: Volatile Organic Compounds
2. IMDS: International Material Data System

We have requested suppliers to furnish non-asbestos materials and have terminated use the asbestos for certain sealing materials (even though the use is compliant with the regulations). All materials for vehicles are free from asbestos from September 2005 production.

Implementation of Environmental Management System

We are promoting to consolidate environmental efforts among group companies and to introduce environmental management system with our suppliers.

Changes in Suppliers' Certification to ISO14001



■ Relations with Shareholders

Basic philosophies

We promote the following activities to gain our shareholders' trust and meet their expectations.

1. We aim at continuously posting profits from business activities and long-term growth, as well as for raising corporate value.
2. We fulfill accountability through appropriate and timely disclosure of management information and ensure management transparency.
3. We determine profit distribution by considering the return of profits to shareholders, strengthening of the management base, and our preparations for future business operations.

Major Activities

Starting from the 2006 regular shareholders meeting, an electronic voting system was introduced for shareholders to exercise their rights, which contributes to the convenience of shareholders. We are committed to disclosing corporate information promptly and fairly to our shareholders and investors. For this purpose, we hold regular briefings for analysts, institutional investors and overseas investors. IR Information* is posted on our website in a timely manner.

*IR (Investor Relations): Activities designed to provide investors with timely and fair information necessary for making investment decisions.

IR Information on Website

On the *Investor Relations* page of our website, we carry such investor information as a summary of financial results, invitations to shareholders meetings, various financial reports, and share prices. These are updated regularly.

For two years consecutively, Isuzu has been awarded the prize for the company with the outstanding IR website. We also send the latest IR news via e-mail to registered customers.

http://www.isuzu.co.jp/world/investor/index.html

Relationship with Employees

Isuzu regards employees as its most precious asset and aims to realize safe and sound working environments.

■ Creating Safe and Sound Workplaces

Based on our safety and health concept that: *Safety is created through the united cooperation of all employees*, Isuzu strives to create safe workplaces, free from accidents. Our efforts have focused on accident prevention. Our specific themes are: the prevention of industrial, traffic and fire accidents; the improvement of the workplace environment; and the promotion of health (see below).

We have been promoting the creation of workplaces where our employees ensure safety by adhering to guidelines, improving facilities, and reinforcing health control. In Fujisawa Plant, employees are encouraged to participate in the Kanagawa Safety Challenge, hosted by Kanagawa Prefecture for attaining a six-month safe driving award for no accidents and no violations.

Measures against Asbestos

According to a survey, no damage to health caused by asbestos was found among our employees and ex-employees. We are removing asbestos from plant buildings and expect this work to be completed by September 2007.

Key Issues and Initiatives

Key issues	Initiatives
Prevention of industrial accidents	• Training for managers and supervisors • Securing safety during work (reviewing procedure manuals; instructing work safety, etc.) • Ensuring legal compliance through implementation of safety assessment • Continuing the horizontal approach of similar accident prevention
Prevention of fire accidents	• Appropriate maintenance and control of facilities and equipment that use hazardous materials • Understanding and eliminating factors causing fire accidents
Prevention of traffic accidents	• Preventing traffic accidents of commuters with cars and motorcycles • Improving traffic safety enlightenment campaigns
Health promotion	• Providing health check and health guidance; continuing follow-up • Enhancing mental health
Improvement of work environment	• Continuing environmental evaluation during safety assessment • Promoting the creation of a comfortable work environment

■ Voluntary Activities by Employees: "USE21"

"USE21" is a voluntary workgroup consisting of employees from the engineering section. The group has been actively promoting a workplace free from workplace and traffic accidents, and fires, by holding safety workshops. The members are working in several workshops to enhance workplace safety, to educate younger employees as well as to improve product quality and technical skills.

The safety workshop holds first-aid seminars and conducts workplace safety patrols and traffic speed control on the premises. The training and safety campaign workshops include lectures and skills practice that have contributed significantly to the prevention of industrial accidents. In fiscal 2005 again, earthquake simulations, firefighting activities, and smoke evacuation drills were held at an external facility at Atsugi General Disaster Control Center in Kanagawa Prefecture, for employees to experience the importance of being prepared for disasters.

Firefighting training

Life-saving training

■ Promoting Total Health

We promote mental and physical health among our employees and their families, with a focus on the prevention of lifestyle diseases. For example, we have a system in place that allows employees to receive 24-hour telephone health counseling and mental health counseling from external professionals.

In addition, we are conducting campaigns that focus on health building of employees and their families. The Gargling and Washing Hands campaign, as well as the Teeth Brushing campaign, were attended by many families, among others. Recreational events such as hiking and orange picking help build not only health, but also communication among families.

Health Promotion Center Activities

Complete medical check-up	4,103 persons
Examination following complete medical check-up	3,725 persons
Mental health counseling	106 persons
24-hour telephone health counseling	326 persons
Hiking	1,001 persons
Recreation sports	224 persons
Home guidance for the aged	277 persons
Lifestyle diseases prevention, Gargling and Washing Hands campaign, etc.	2,048 persons

Orange picking tour

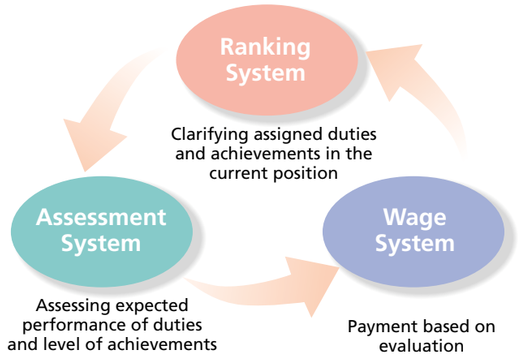
■ A New Personnel System

In this era of increasing global competition, all employees are expected to perform at their best, with strong motivation and passion for Isuzu's future growth. In order to achieve this, we have been creating a new personnel system that encourages staff to achieve job satisfaction and a sense of fulfillment.

We prepared the new system in fiscal 2004 and introduced it in April 2005. We re-assessed three previous issues: clarifying evaluation standards; evaluating appropriately; and remunerating appropriately. We then restructured our ranking, evaluation, and payment systems accordingly.

In clarifying our evaluation standards, we are encouraging employees to think, work and challenge themselves, to increase their motivation for change and to perform to the best of their abilities.

Key Points of the New Personnel System



■ Gender-free Employment Opportunities and Employment of Persons with Disabilities

For the reformation and proper application of the personnel system in compliance with the amended law, Isuzu has realized complete equality between male and female employees in every area of the company's operation, from recruiting to payment. We are actively promoting people with strong motivation and excellent ability in a global society, assigning management and overseas posts to female employees as well.

We are also promoting the employment of disabled persons with a view to realizing a society where people support each other, regardless of disabilities. The employment rate of persons with disabilities in fiscal 2005 was 1.90%, which exceeded the legal rate and the average rate of other private sector companies for the sixth straight year.

■ Employee Satisfaction Survey

In December 2004, Isuzu carried out an Employee Satisfaction Survey in order to collect data and to determine new measures to improve the workplace environment. We wanted to gauge how employee motivation had changed since the previous survey, held in 2002.

Overall, judging from our improved business performance, it appears that employee motivation has improved slightly. The main factor was cited as being the prioritizing of employee relationships, followed by performance of duties. On the other hand, many staff members had requests regarding our compensation system.

Now, the new personnel system has been designed to evaluate achievements resulting from motivation, and this will be reflected in our pay structure. We will remain focused on the motivation of employees, according to the Employee Satisfaction Survey, and utilize the results as one of the measures to confirm the orientation of the company.

■ Personnel Development

We reviewed our training system in line with the new personnel system of April 2005, and recognizing that increasing an individual's abilities is linked to raising collective achievements and thus Isuzu's achievements, we have been providing various training programs for employees. In order to achieve our corporate vision of: *Aspiring to be a Leading Global Company of Commercial Vehicles and Diesel Engines*, we offer support to our employees through various training activities so that they can acquire the knowledge and insight necessary to survive in this competitive world.

New recruit training

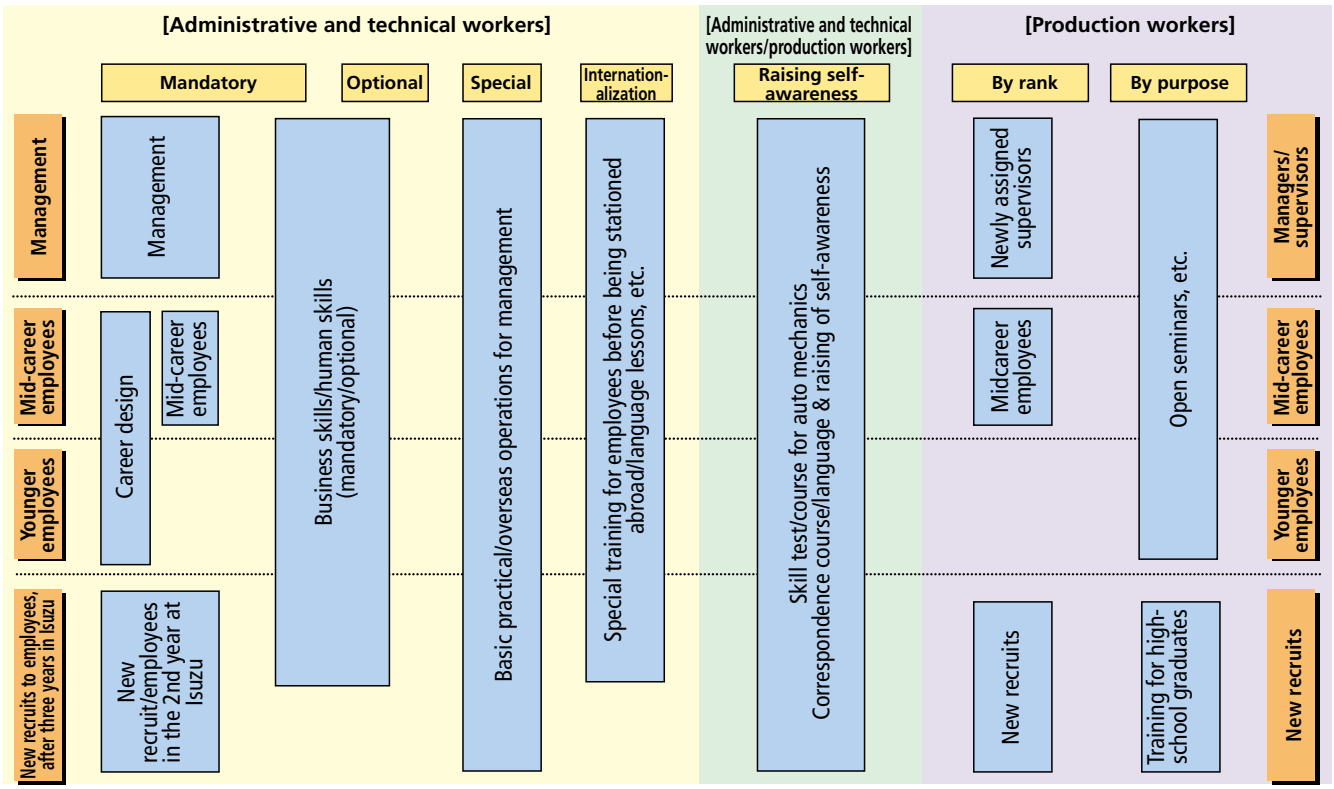
In implementing human resource training programs, we are giving special consideration to not making what is learned transient, "here today, gone tomorrow" knowledge. The aim of such training for employees is to apply what they learn to their daily jobs. We hope our programs will motivate the trainees to learn more for themselves. (Naoto Yoshioka)

I am interested in this task of developing programs step by step, from the basis of considering what type of human resources we are aiming for and how to prepare the agenda for this. At the same time, I am keenly aware of the responsibility involved in my task. We are going to develop more interesting programs and hope that everyone feels satisfaction after attending the training. (Keiko Dohtan)

Fiscal 2005 Results

Key issues	Initiatives	Hours conducted	Total participants
Training for young employees	Individual capacity building is based on self-education, so we will offer business skills and independent thinking training, starting during an employee's informal appointment period, and then on through the fifth year of employment, in order to develop effective learning habits among younger workers.	12,760	361
Self-driven personnel training	Offering opportunities to consider one's own career path in order to develop independent employees.	1,232	77
Position-specific training	Supporting skills acquisition for OJT managers and management supervisors, etc., as required for their individual roles and circumstances. In fiscal 2004, evaluator training was provided for 797 employees, primarily on the new personnel evaluation system.	11,392	1,044
Training for global personnel	Providing English writing and conversation training opportunities, in order to better respond to business globalization.	11,415	115
Raising self-awareness	Supporting self-education opportunities in order to improve individual employees' skills (e.g. correspondence courses, English conversation training).	—	—

Training System Diagram



Comments from Our Readers

Given below are some opinions on the Isuzu Environmental & Social Report 2006 from third-party readers. We would like to reflect these in our future efforts towards building a sustainable society.

Jiro Adachi

Executive Director
Japan Center for a Sustainable Environment and Society
Non-Governmental Organization

This year's report has again demonstrated Isuzu's development in environmental and social aspects as a result of the continuous efforts by Isuzu. Robust achievements in making environmentally friendly products can be seen in the development of ecological vehicles. There has also been improvement not only in hardware but also in software, including *Mimamori-kun*. (Congratulations on receiving the Eco-Products Award!) Progress has also been made in developing environmentally friendly plants. The fact that Isuzu Engine Manufacturing Hokkaido received the Hokkaido Zero Emission Award indicates that the Consolidated Environmental Management is having effects in domestic affiliated companies as well.

I expect Isuzu to continue striving to be a pioneer in realizing a sustainable society, motivated by these awards.

Now, let me make some suggestions for the future.

Firstly, I think the report could be improved by giving more details of your consolidated management efforts abroad. For that purpose, more detailed coverage of social measures in the area of labor, in addition to environmental ones, is required.

Secondly, in order for Isuzu to be a Leading Global Company in both environmental and social aspects, it is important to give a more detailed picture of your corporate image on a mid- and long-term basis, after estimating the expected changes in the external environment in the future including both environmental and social factors. Accordingly, it is essential to set up in-house research sections and build a system that incorporates external ideas and comments, e.g. the establishment of an advisory board.

Eiko Kamoshida

Committee Chairperson
East Japan Chapter Operations
Nippon Association of Consumer Specialists (NACS)
Representative CS Management Office

This year's report shows that Isuzu has been actively promoting further activities, for example, featuring the serious, social and environmental problem of global warming. In particular, the illustrations of the warming-prevention activities are easy for everyone to enjoy and understand, from small children to adults. They help us to see such diversified efforts as being more familiar ones. I expect future reports to keep on providing a transition of such efforts clearly.

I was also impressed by the progress of *Mimamori-kun*. *Mimamori-kun* is a system that makes it easy for consumers to see how they can improve their truck driving skills, using numeric figures, and contributes to preserving the environment. *Mimamori-kun* is also highly respected by the industry. I think it is essential for society in future to build a framework that makes driving abilities visible, not only for trucks, but also for other vehicles and motorcycles.

Lastly, the enhanced social aspect makes this year's report more distinctive. The new section: *Relationship with Suppliers and Shareholders*, shows Isuzu's consideration for stakeholders who support its management behind the scenes. Also, the section, *Relationship with Employees*, shows clearly the company's position on human resource development in the achievement of Isuzu's corporate vision.

This report conveys the enhanced morals within the organization, through various efforts that focus on people. I look forward to seeing both the environmental and social activities of Isuzu in the future.

[From Editors Responding to Our Readers' Comments]

Let us first extend our sincere thanks to Mr. Adachi and Ms. Kamoshida. We have received very favorable evaluations saying: This report presents the status of activities in a manner that is easy to understand, while Isuzu's achievements can be observed in *Mimamori-kun* and consolidated environmental management as well as product manufacturing and plant building.

On the other hand, they provided invaluable suggestions such as: Efforts abroad should be described in more detail; Mid- and long-term corporate image should be presented more specifically; Changes in warming-prevention measures should be more visible; and The environmentally friendly *Mimamori-kun* system should be further developed.

We agree that a detailed report of activities, both domestic and abroad, as well as disclosed mid- and long-term orientation, are indeed the responsibilities of Isuzu as a global business. We must also tackle the ongoing development of warming-prevention activities and *Mimamori-kun*. We are determined to respond to the comments forwarded to us. Thank you.

Cover message: The cover design expresses our desire to treasure and hand over this beautiful earth to the next generation. It also symbolizes our hope that our global business activities will help contribute to the symbiosis of man and earth.

Environmental & Social Report 2006

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ISUZU MOTORS LIMITED
6-26-1 Minami-Oi, Shinagawa-ku,
Tokyo 140-8722 Japan.
TEL: +81-3-5471-1394 FAX: +81-3-5471-1039
http://www.isuzu.co.jp/world/

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