TOYOTA

TOYOTA MOTOR CORPORATION

Environmental Report 2002

■ Company Outline

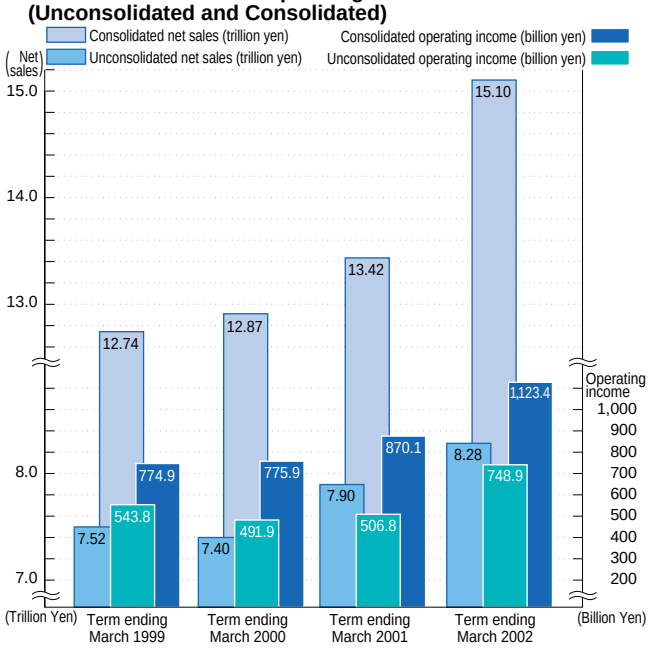
Name	TOYOTA MOTOR CORPORATION
Date of establishment	August 28, 1937
Capital	397.0 billion yen
Number of employees	66,820

*Capital and number of employees are as of the end of March 2002. Capital is rounded to the nearest 100 million yen.

■ Sales Status

	Unconsolidated Base (rounded to the nearest 100 million yen)	Consolidated Base (rounded to the nearest 100 million yen)
	FY2002 (April 2001 - March 2002)	FY2002 (April 2001 - March 2002)
Net sales	8,284.9 billion yen	15,106.2 billion yen
Operating income	748.9 billion yen	1,123.4 billion yen
Ordinary income	768.9 billion yen	1,113.5 billion yen
Net income	470.2 billion yen	615.8 billion yen
Plant and equipment investment	257.9 billion yen	940.3 billion yen
R&D expenses	527.3 billion yen	592.5 billion yen
Number of vehicles produced	3,364,009 vehicles	5,404,216 vehicles
Number of vehicles sold	3,428,688 vehicles	5,784,917 vehicles

■ Trend in Net Sales and Operating Income (Unconsolidated and Consolidated)



Regarding Environmental Report 2002

This Report summarizes the environmental actions taken by Toyota Motor Corporation on an unconsolidated basis in conjunction with its corporate activities and the progress of consolidated environmental management both in Japan and overseas. The period covered in the data is from April 2001 to March 2002, and major developments are described as of the beginning of July 2002.

Toyota has been issuing environmental reports since 1998 in order to improve disclosure of environment-related information, as well as to enhance environmental awareness among employees towards raising environmental performance, and as a means to share information among related companies.

In the 2002 edition, Toyota attempts to disclose information concerning consolidated subsidiaries in Japan and overseas and to clarify both goals and results in an easy-to-understand manner without sacrificing either the volume or breadth of the information. This year, Toyota has enhanced relations with stakeholders including employees, in environmental areas, through new chapters entitled “Cooperation with Society” and “Relations with Employees.” Environmental data on air and water quality, and substances subject to PRTR was included at the end of the report in previous editions. This is now available on Toyota’s Web site along with details of specific activities at each plant and housing works.

URL http://www.toyota.co.jp/en/envrep

Contents

This mark refers to the page where more information can be found

Please visit the Web sites below:

URL ● Toyota Environmental Chronology
http://www.toyota.co.jp/en/envrep/chrono/

URL ● Environmental data of each plant and housing works
http://www.toyota.co.jp/en/envrep/plantdata/

2010 Global Vision and the Environment

Fujio Cho
President, Toyota Motor Corporation
Chairman, Toyota Environmental Committee

Toyota Motor Corporation announced the "2010 Global Vision" in April 2002 as a policy that sets the direction for mid- to long-term management. The vision defines four social positions that Toyota believes will develop during the first half of the twenty-first century as well as the corporate image that Toyota should pursue. The first of these positions is the advent of a "recycle-oriented society." In the future, society will progress towards a recycle-oriented society on a global scale and we are shifting from an era of large-scale production, large-volume consumption, and disposal to one that promotes "Reduce, Reuse, and Recycle," as calls for transition to a recycle-oriented society increase. Amidst these developments, Toyota will endeavor to become a leader of global regeneration through its outstanding environmental technologies.

In addition, Toyota believes that "motorization will advance on a global scale." Motorization will accelerate in emerging markets such as China and India and it will become possible for virtually all people around the world to enjoy the high degree of mobility afforded by automobiles. Toyota will further spread the appeal of automobiles throughout the world and increase the number of Toyota fans, thereby working towards ensuring continued growth. Striking a balance between the "environment" and "growth" is an extremely important challenge for Toyota. When considering the potential environmental impact resulting from the motorization of emerging markets, the need for higher levels of environmental response is apparent.

To meet these challenges, Toyota is determined to conduct reviews and implement bold reforms to structures, systems, and methods in technology development, product development, production technology, production systems, and management, while seeking to become "a virtuous enterprise" and "a respected presence" whose growth will be celebrated by people around the world. In order to achieve this, Toyota must make contributions to the world in the area of the environment. Based on the concept that "without high levels of environmental responses, there can be no growth," Toyota is promoting management with the environment as a core element of its mid- to long-term growth strategy.

July 2002

Environmental Report 2002

Kosuke Shiramizu
Executive Vice President,
Member of the Board
in Charge of Environmental Issues,
Toyota Motor Corporation

The Environmental Report 2002 covers mainly activities during FY2001.

The leading results of those activities are the enhancement of global consolidated environmental management, the start of implementation of the Third Toyota Environmental Action Plan, the launch of the Estima Hybrid and the Crown with a mild hybrid system, further development of fuel cell vehicles, the early achievement of the 2005 goal for reduction of CO_2 emissions at production processes, the start of full-scale operations at the Automobile Recycle Technical Center, and further reductions in substances of environmental concern in automobile parts.

This report will give readers an understanding of the progress that Toyota has made in its commitments, including top-level environmental responses in respective countries and regions, achieving the FY2010 Fuel Efficiency Standards ahead of schedule by 2005, early introduction of ultra low-emissions vehicles, achieving annual production of 300,000 units of hybrid vehicles, and taking on new challenges towards zero emissions in production processes.

Environmental improvement activities are simply the reverse side of improving productivity and reducing costs. If we look at activities to increase productivity and lower costs such as seeking to reduce energy and water consumption and waste in the production area, and to enhance resource productivity from a different perspective, we can see that they contribute to reductions in environmental impact. At the same time, activities conducted under the environmental rubric will be opportunities for implementing further internal reform, including enhancing productivity and reducing costs.

The driving force behind reform is said to be in proportion to each individual employee's passion and their dedication. Toyota will continue to promote reform with respect to the environment through a company-wide effort with tremendous passion and dedication.

July 2002

Highlights of Environmental Initiatives in FY2001

Environmental Management

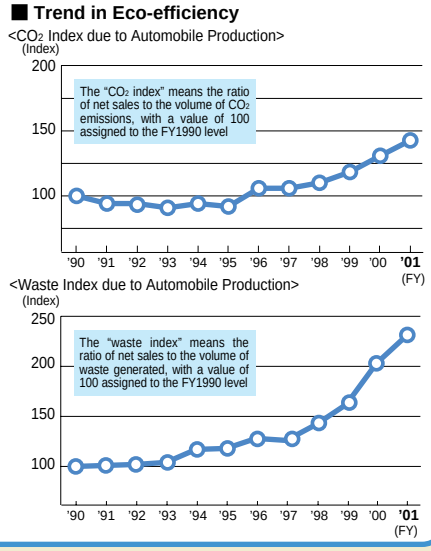
Action in Accordance with Third Toyota Environmental Action Plan Started and First Year Goals Achieved

Activities were started in accordance with the Third Toyota Environmental Action Plan, that set the goals for FY2005. In FY2001, the first fiscal year of the plan, goals were achieved in all areas. pp. 10 - 11

"Customer Effects" and "Eco-efficiency" Calculated in Addition to Environmental Costs and Economic Effects

Environmental costs in FY2001 were 133.9 billion yen, comprising 1.6% of net sales. Toyota also calculated "customer effects" enjoyed by customers as a result of environmental efforts, and "eco-efficiency," which aims to minimize environmental impact while maximizing the value created. pp. 12 - 13

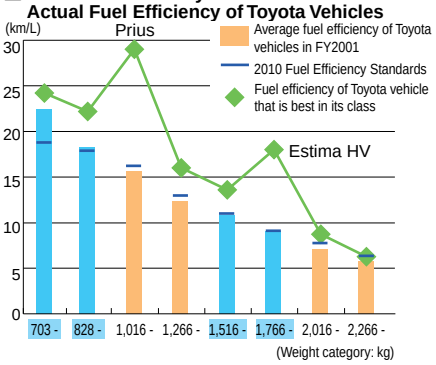
Trend in Eco-efficiency



Development and Design

2010 Fuel Efficiency Standards Achieved in Four Categories

2010 Fuel Efficiency Standards and Actual Fuel Efficiency of Toyota Vehicles



Toyota achieved the 2010 Fuel Efficiency Standards in four of the eight categories by vehicle weight. The number of vehicles meeting the 2010 Fuel Efficiency Standards reached 51% of total production. p. 14

Increased Introduction of Vehicles that Meet the Approval System for Low-Emission Vehicles

Toyota increased the number of models that meet the Approval System for Low-Emission Vehicles to 124 models (87% of total production).

Number of Models and Percentage of Total Production that Met the Approval System for Low-Emission Vehicles in FY2001

Category	Reduction level	No. of models (percentage of total production)
☆ Transitional Low-Emission Vehicles	25% lower than standard levels for 2000	111 (78.5%)
☆☆ Low-Emission Vehicles	50% lower than standard levels for 2000	1 (0.2%)
☆☆☆ Ultra Low-Emission Vehicles	75% lower than standard levels for 2000	12 (8.2%)

(March 2002)

p. 16

Increased Introduction of Vehicles that Meet 2010 Fuel Efficiency Standards and Low-Emission Vehicles

The number of vehicles that meet the 2010 Fuel Efficiency Standards and qualify as "Low-Emission Vehicles," in all three categories of transitional, low and ultra, reached 50% of total production. Further 4 gasoline vehicle series met the government fleet standards based on the Law on Promoting Green Purchasing. pp. 15 - 16

Hybrid Passenger Car Line-up Expanded to 3 Vehicle Series and Cumulative Sales Reach 100,000 Units

In addition to the Prius, Toyota also introduced the Estima Hybrid and the Crown with mild hybrid system. By the end of March 2002, cumulative sales of hybrid vehicles worldwide had reached 100,000 units. p. 17

Development of Fuel Cell Hybrid Vehicles Accelerated and Plans Announced for Limited Introduction

Based on results of field evaluation tests in Japan and the U.S., Toyota has announced that it will further improve system reliability and make a limited introduction of FCHV-4 vehicles equipped with high-pressure hydrogen tanks, around the end of 2002.

p. 18
See also pp. 54 - 57 for "Special Story"

LCA Implementation Results Disclosed in New Model Catalogs

LCA results were disclosed for the first time in product catalogs of the newly launched Premio and Allion. LCA information is also available on Toyota's Web site. p. 19

Procurement/Production/Logistics

Achievement of 100% Green Purchasing

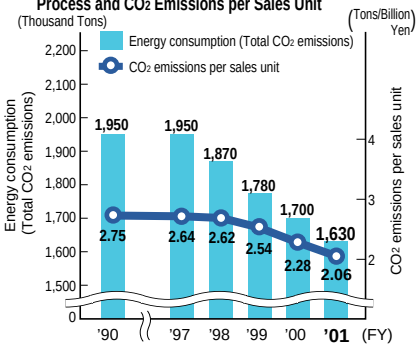
Toyota achieved 100% green purchasing for office supplies (approximately 1,400 items) and office equipment (approximately 300 items), reaching the goal set in the Third Toyota Environmental Action Plan two years ahead of schedule. p. 22

Improvements to the EMS (Environmental Management System) Internal Audit System

The internal audit system was improved to include a main audit and a follow-up audit. Status of correction is confirmed within six months of the main audit, thus increasing the effectiveness of improvements. p. 23

Reduction in Total CO_2 Emissions at Production Processes by 4% from the Previous Year

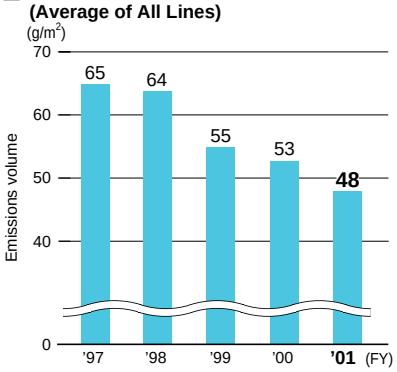
Energy Consumption at Toyota's Automobile Production Process and CO_2 Emissions per Sales Unit



Toyota reduced total CO_2 emissions volume to 1.63 million tons, against the goal of 1.7 million tons. Key measures taken include introduction of energy-saving New Body Lines and cogeneration systems, and ensuring to stop equipment when not in operation. p. 26

Reduction of VOC Emissions on All Lines to an Average of 48g/m²

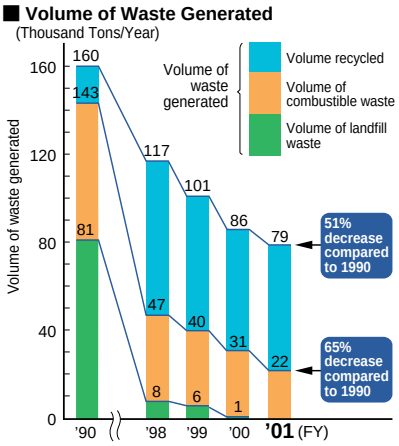
Trend in VOC Emissions Volume (Average of All Lines)



Average VOC emissions on all lines was reduced beyond the target figure to 51g/m² and on advanced painting lines to as little as 30g/m². Measures taken mainly include the expanded use of water borne base coat paints and the use of high solid clear paints. p. 27

Reduction of Combustible Waste toward Achieving Zero Emissions

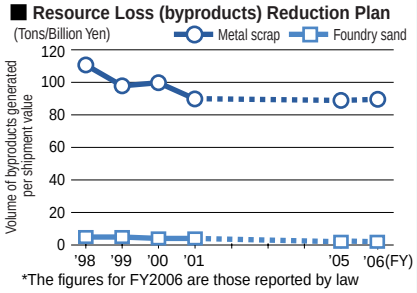
■ **Volume of Waste Generated**



Toyota reduced the volume of combustible waste generated to 22,000 tons, through measures such as reduction of wastewater sludge, better sorting of paper, etc. Further, Toyota has also been maintaining "zero landfill waste." p. 28

Development of a Resource Conservation Scenario

■ **Resource Loss (byproducts) Reduction Plan**



*The figures for FY2006 are those reported by law

Toyota developed a scenario for reduction of primary raw materials such as steel, aluminum, etc., as well as for supplementary materials such as foundry sand, oils and fats, etc. Actions were started to reduce resource usage at all automobile manufacturing processes. p. 29

Service Parts Logistics Division Acquires ISO 14001 Certification

ISO 14001 on-site operation audit

In order to increase the efficiency of logistics, Toyota established an environmental management system in everything from logistics planning to on-site management and operation. p. 33

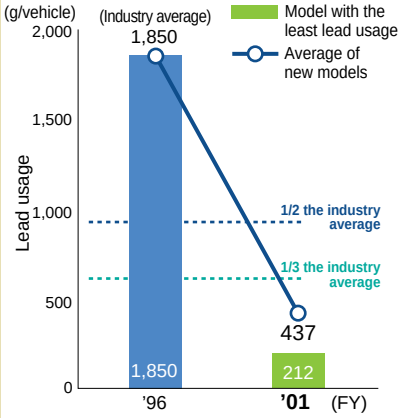
Recycling and Sales/After Sales

Improvement and Strengthening of the Prior Assessment System in Recycling

Prior Assessment design guidelines were reviewed from the perspective of the 3Rs, including "Reduce" and "Reuse" to "Recycle." Categories such as long useful life and resistance to corrosion were added to evaluation items. p. 34

Reduction of Lead Usage

■ **Status of Lead Reduction in Toyota Vehicles**



Toyota reduced lead usage to 1/3 or less of the 1996 level in all new models and those that underwent complete redesign in FY2001. Lead usage was further reduced to 1/5 of the 1996 level in 5 of these vehicle series. p. 35

Sales of Used Parts Expanded Nationwide

In order to promote the reuse of automobile parts, Toyota started to sell recycled parts at parts distributors nationwide, using e-commerce. p. 36

Automobile Recycle Technical Center Starts Operations

Automobile Recycle Technical Center

The Automobile Recycle Technical Center conducted research on a number of topics such as, dismantling and recycling technologies in Japan and overseas, recycling and dismantling technologies on new vehicles, tools that enable quick dismantling and easy removal, etc. p. 38

Automobile Peripheral and Other Businesses

Intelligent Transport Systems (ITS)

Start of Commercial Operations of IMTS

IMTS that started operation on Awaji Island

The Intelligent Multi-mode Transit System (IMTS), that combines the advantages of rail and bus transport, was adopted as a means for transport at the Awaji Farm Park England Hill Area on Awaji Island. p. 42

Biotechnology and Afforestation Business

Automobile Parts from Biodegradable Plastic

Prototype of automobile parts from biodegradable plastic

Biodegradable plastics, made primarily from plants, were used in the ES^3 which was presented as a concept car at motor shows. p. 43

Establishment of a New Company for Construction of Roof Gardens

In order to help ease the heat island effect, Toyota Roofgarden Corporation was established in December 2001 for roof garden construction business, using peat mined in China. p. 43

Housing Business

Promotion of Activities Based on the Toyota Housing Business Environmental Action Plan

An environmental action plan covering the period FY2001 to FY2005 was drafted, and activities were expanded to dealers, construction companies and suppliers. p. 44

Cooperation with Society

Achieving Sustainable Development

Stakeholder Dialog held to Discuss Sustainable Development

Toyota held the "First Toyota Stakeholder Dialog" with the participation of NPOs, academic research organizations, consumers and other parties in a variety of different positions. p. 47

Establishment of "Nature School" in Cooperation with Environmental NPOs

A meeting for exchanges of opinions was held at a *gassho* style house

Toyota held an inspection tour, inviting environmental NPOs to the proposed site for the Shirakawa-go Nature School. Participants exchanged opinions on educational programs and facility construction, aimed at opening the school in 2005. p. 47

Social Contribution Activities

Forest of Toyota Second Eco no Mori Seminar

The second session of Eco no Mori Seminars was held jointly with an environmental NPO. Toyota will continue to conduct educational programs aimed at producing human resources capable of "building a 21st century Satoyama society." p. 49

Reforestation Activities in China

Before tree planting

After tree planting

In 2001, Toyota started a reforestation project in a region that faces serious problems such as deforestation and desertification, with the goal of reforesting 1,500ha in three years. p. 49

Relations with Employees

Environmental Education and Awareness-promotion Activities

Environmental Education for Key Positions

Environmental education for key positions

Toyota initiated environmental education for department general manager class employees, key positions central to executing business. p. 50

Safety and Health

Mental Health Care Training for Managers and Supervisors

Participants of an active listening course reflect on the importance of attentive listening

Toyota has expanded training for managers to improve health at the workplace, and has also introduced active listening courses, where supervisors learn to interact better with subordinates through actual listening experiences. p. 51

Volunteer Support Activities

Support of Employee Volunteer Activities through Communication with the Local Community

Clean activities along Yahagi River

In FY2001, for the second time, approximately 980 Toyota employees participated in "clean activities" along the banks of the Yahagi River. The Toyota Volunteer Center supported activities aimed at symbiosis with the local community and society. p. 52

Consolidated Environmental Management

All Companies Subject to Consolidated Environmental Management Draft Environmental Action Plans

In FY2001, approximately 200 consolidated subsidiaries under direct control of Toyota completed drafting of action plans. All overseas distributors drafted individual environmental action plans. Production companies, that had drafted action plans in FY2000, started activities in FY2001. pp. 60 - 62

First Overseas Regional Production Environment Conference

In order to raise standards and accelerate activity through mutual learning, Toyota initiated Overseas Regional Production Environment Conferences. The first conference was held in Thailand in March 2002. p. 61

Increased Publication of Environmental Reports

Australia

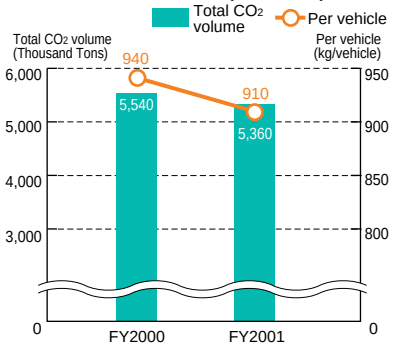
Europe

North America

To promote information disclosure, 17 automotive-related production companies in Japan and overseas affiliates in three regions, Europe, North America and Australia, published environmental reports. p. 63

First Disclosure of Global Environmental Data

■ CO_2 Emissions Volume (Worldwide)



Toyota collected and studied individual environmental data on CO_2 emissions, volume of waste generated and water consumption in Japan and three regions overseas. The data has been included in this report. pp. 64 - 65

Status of Major Environmental Data for FY2001

In FY2001, the first fiscal year of the Third Toyota Environmental Action Plan for the period FY2001 to FY2005, almost all goals for the fiscal year were achieved in the areas of product, production and recycling.

In improving product fuel efficiency, Toyota achieved ahead of schedule, the 2010 Fuel Efficiency Standards for average fuel efficiency by vehicle weight, in four of the eight categories. In reducing exhaust emissions, Toyota increased the number of models that meet the Ministry of Land, Infrastructure and Transport's Approval System for Low-Emission Vehicles to a cumulative total of 124 models. In particular, models that qualify as Ultra Low-Emission Vehicles increased to 12.

Sales of clean-energy vehicles in Japan was nearly double that of the previous fiscal year, due to the introduction of new hybrid vehicles.

In production, Toyota achieved reductions in CO_2 emissions levels beyond its goal. Total CO_2 emissions volume was 4% less than the previous fiscal year, while CO_2 emissions per sales unit was reduced by 10% from FY2000.

Toyota was able to maintain "zero landfill waste" at all its plants. Start of activities toward "zero combustible waste" led to a 29% reduction in combustible waste from FY2000.

Regarding substances of environmental concern, VOC emissions volumes on all lines were reduced to an average of 48g/m^2, surpassing the target figure. Discharge volumes of substances subject to PRTR were reduced by 24% from the previous fiscal year.

In improving recoverability, in FY2000, Toyota completed the technological goal of achieving 90% recovery rate, proved at Toyota Metal Co., Ltd. In FY2001, Toyota promoted technological development aimed at achieving 95% recovery rate by 2005.

Major Environmental Data

(In order to look at the medium and long-term trends, the figures for FY1990 and FY1995 are listed in addition to those for the past three years)

Area	Item	Key indicator (unit)		FY1990	FY1995	FY1999	FY2000	FY2001	FY2005 goals set in the 3rd Action Plan	Related pages in this report
Product	1. Fuel efficiency (CO_2)[1]	Average fuel efficiency by weight category [km/L] (Gasoline-powered passenger vehicle) [1]	703 - 827kg	17.6	17.6	21.4	22.3	22.4	Achieve the new fuel efficiency standards in Japan ahead of schedule	14 | 15
			828 - 1,015kg	12.3 (average)	12.3 (average)	13.9 (average)	14.5 (average)	18.3		
			1,016 - 1,265kg					15.7		
			1,266 - 1,515kg					12.4		
			1,516 - 1,765kg	8.5 (average)	8.0 (average)	9.0 (average)	9.4 (average)	10.6		
			1,766 - 2,015kg					9.1		
			2,016 - 2,265kg					7.5		
			2,266kg -					6.1		
	2. Exhaust gases	Vehicles that achieved levels 25% lower than 2000 gasoline standards (No. of models: cumulative)		—	—	26	74	111	Achieve further low-emissions levels (increased introduction of vehicles with emission levels 75% lower than the standard)	16
		Vehicles that achieved levels 50% lower than 2000 gasoline standards (No. of models: cumulative)				—	—	1		
		Vehicles that achieved levels 75% lower than 2000 gasoline standards (No. of models: cumulative)		—	—	—	3	12		
	3. Clean-energy vehicles	Number of units sold (units)		—	—	14,513	12,448	23,616	Improve performance of hybrid systems and increase number of vehicles equipped with hybrid systems aimed at popularization	18
		Electric vehicles (units)		—	—	46	19	56		
		Hybrid vehicles (units)		—	—	14,289	12,263	23,373		
		CNG vehicles (units)		—	—	178	166	187		
Production	1. CO_2	Total emission volume (calculated in CO_2 equivalent in 10 thousand tons/year)		195[2]	190	178	170	163	Reduce total emissions volume by 5% of 1990 levels by the end of FY2005	26
		Discharge volume per sales unit (calculated in CO_2 equivalent in tons/100 million yen/year)		27.5[2]	29.2	25.4	22.8	20.6		
	2. Substances of environmental concern	VOC[3] emissions volume per body area (g/m^2)		—	—	55	53	48	Reduce average emissions volume to 35g/m^2 or less in all lines by the end of FY2005	27
		Discharge volume of PRTR substances (thousand tons/year)		—	—	5.8	5.1	3.9	Reduce to 50% of FY1998 level by the end of FY2005	
	3. Waste[4]	Volume of combustible waste generated (thousand tons/year)		62	41	34	30	22	Reduce to 1/3 or less of FY1990 by the end of FY2005	28
Recycling	1. Recoverability	Proved at Toyota Metal (%)		81	83	88	90	—[5]	Verify and propose recycling technologies for 95% recoverability[6]	—

1. The fuel efficiency figures for FY1990 have been obtained by converting the figures obtained in the 10 Japanese test cycle to the 10-15 Japanese test cycle
2. Total figure for the period from January to December 1990
3. VOC (Volatile Organic Compounds): A typical example is paint solvents
4. Zero landfill waste was achieved in FY2000 and is being maintained
5. Calculations will be made and figures disclosed when the definition for recovery rate according to the Automobile Recycling Law (common name) is determined
6. Plan to make revisions when targets for automakers are clearly defined by the Automobile Recycling Law (common name)

Environmental Management

2010 Global Vision

In April 2002, Toyota adopted the 2010 Global Vision, a set of long-term policies that determine the direction for long-term management.

Centered on the basic theme of "Innovation into the Future," the 2010 Global Vision proposes the corporate image for which Toyota should strive (four innovations for the future) and the paradigm change it should undergo with a view toward what society is expected to be like in the long term. Toyota seeks to become a global corporation that contributes to future growth and the realization of a prosperous society in the new century by having each employee adopt this perspective on reform, and work with tremendous passion and dedication.

In addition, the concepts of the Vision will be reflected in our Environmental Action Plan and other policies in order to promote environmental initiatives even further.

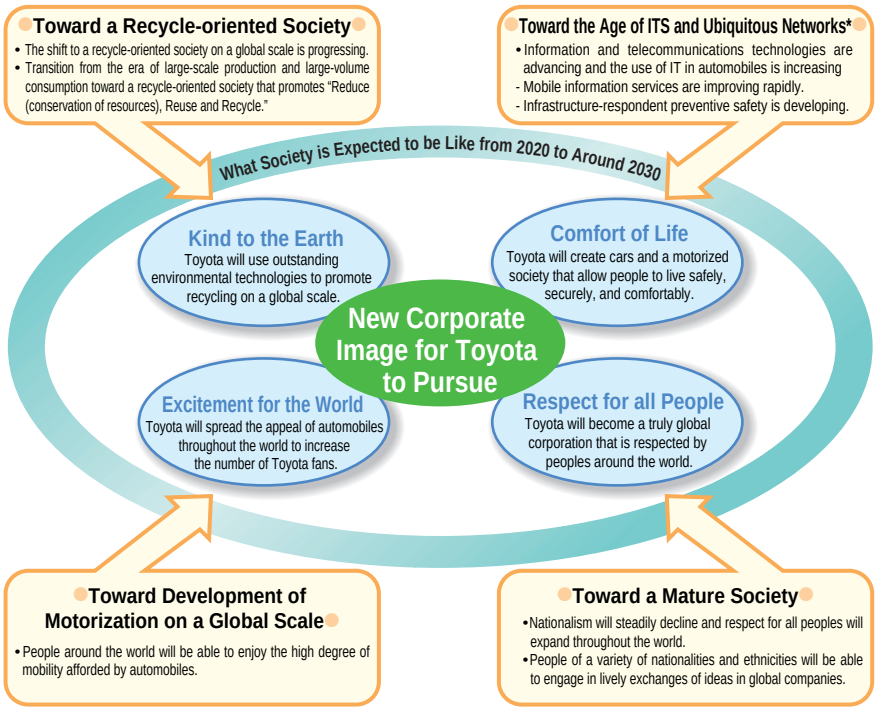
■ **2010 Global Vision**

Innovation into the Future

Working with Passion and Dedication to Create a Prosperous Society

Toyota is again reflecting on the meaning of its business spirit since its foundation –"contributing to society by making things and making automobiles"– and is working with tremendous passion and dedication to "realize a prosperous society in the new century."

■ **A New Corporate Image for Toyota to Pursue**



*Ubiquitous Networks:
An environment under which the advance of information and telecommunications allows anyone to access all information anytime from any location

Basic Concepts with Regard to the Environment

Principles and Policies

Since its foundation, Toyota has conducted research and development based on the business spirit of "contributing to society by making things and making automobiles." In order to codify this spirit, in 1992 Toyota adopted the "Guiding Principles at Toyota Motor Corporation." Based on these principles, Toyota established the "Comprehensive Approach to Global Environmental Issues," also known as the "Toyota Earth Charter," and is conducting its business activities with the environment positioned as a top-priority management issue.

Environmental Action Plan

The Toyota Environmental Action Plan is a mid- to long-term plan that summarizes specific activities and goals in order to promote company-wide environmental preservation activities in accordance with the Toyota Earth Charter.

Based on this plan, Toyota established an Annual Environmental Action Policy. In addition, it developed policies suitable to the issues specific to each group and plant and had these policies implemented by all employees.

The Third Toyota Environmental Action Plan describes specific action plans for the period from FY2001 to FY2005. In FY2001, the first year of the plan, activities were launched to achieve the new goals.

Implementation Structure

Toyota Environment Committee

The committees indicated in the chart to the right were established under the Toyota Environment Committee, which is chaired by the President, to address issues and response policies in each area. All related departments promote environmental actions in cooperation with these committees. The Environmental Affairs Division, a specialized environmental organization, performs the functions of a secretariat, including the drafting of company-wide environmental policies.

Environmental Management System Audits

Environmental Management Systems (EMS) were constructed in the Research & Development Group, which is in charge of vehicle development and design, the Production Engineering Group, which is in charge of production preparations and production technology, and the Production Group, which is in charge of automobile and housing production and the Service Parts Logistics Division. Internal environmental auditing teams conduct internal audits of each EMS while third-party organizations conduct external audits.

In the Production Engineering Group and the Production Group, a double-audit system has been adopted to enhance the effectiveness of improvements resulting from internal audits. Under this system, an initial audit is conducted, after which a follow-up audit is conducted so that continuous improvements can be made.

See p. 14 for the Research & Development Group
See p. 23 for the Production Group
See p. 24 for the Production Engineering Group
See p. 33 for the Service Parts Logistics Division

Guiding Principles at Toyota Motor Corporation

<Adopted January 1992, revised April 1997>

1. Honor the language and spirit of the law of every nation and undertake open and fair corporate activities to be a good corporate citizen around the world
2. Respect the culture and customs of every nation and contribute to economic and social development through corporate activities in local communities
3. **Dedicate ourselves to providing clean and safe products and to enhancing the quality of life everywhere through our activities**
4. **Create and develop advanced technologies and provide outstanding products and services that fulfill the needs of customers worldwide**
5. Foster a corporate culture that enhances individual creativity and teamwork value, while honoring mutual trust and respect between labor and management
6. Pursue growth in harmony with the global community through innovative management
7. Work with business partners in research and creation to achieve stable, long-term growth and mutual benefits, while keeping ourselves open to new partnerships

New Toyota Earth Charter

<Announced April 2000>

I. Basic Policy

1. Contribution toward a prosperous 21st century society

Contribute toward a prosperous 21st century society.
Aim for growth that is in harmony with the environment, and set as a challenge the achievement of zero emissions throughout all areas of business activities.

2. Pursuit of environmental technologies

Pursue all possible environmental technologies, developing and establishing new technologies to enable the environment and economy to coexist harmoniously.

3. Voluntary actions

Develop a voluntary improvement plan, based on thorough preventive measures and compliance to laws, that addresses environmental issues on the global, national, and regional scales, and promotes continuous implementation.

4. Working in cooperation with society

Build close and cooperative relationships with a wide spectrum of individuals and organizations involved in environmental preservation including governments, local municipalities, related companies and industries.

II. Action Guidelines

1. Always be concerned about the environment
Challenge achieving zero emissions at all stages, i.e., production, utilization, and disposal

- (1) Develop and provide products with top-level environmental performance
- (2) Pursue production activities that do not generate waste
- (3) Implement thorough preventive measures
- (4) Promote businesses that contribute toward environmental improvement

2. Business partners are partners in creating a better environment
Cooperate with associated companies

3. As a member of society
Actively participate in social actions

- (1) Participate in the creation of a recycle-oriented society
- (2) Support government environmental policies
- (3) Contribute also to non-profit activities

4. Toward better understanding
Actively disclose information and promote environmental awareness

III. Organization in Charge

Promotion by the Toyota Environment Committee which consists of top management (chaired by the President)

The Third Toyota Environmental Action Plan

<Announced April 2000>

Action Items

- (1) Fuel efficiency
- (2) Exhaust emissions
- (3) Clean-energy vehicles
- (4) Recoverability
- (5) Substances of environmental concern in products
- (6) Automobile noise
- (7) Air conditioning systems
- (8) Global warming threat
- (9) Substances of environmental concern
- (10) Waste and resource conservation
- (11) Water resources
- (12) Logistics
- (13) Prior-assessment systems
- (14) Environment-oriented business ventures
- (15) Suppliers
- (16) Dealers' cooperation
- (17) Recycling system
- (18) Transportation systems
- (19) Related basic research
- (20) Socially-contributing activities
- (21) Among the public
- (22) Among employees
- (23) Comprehensive environmental management

■ Organization Framework (As of March 2002)

Toyota Environment Committee

Chairman: President Fujio Cho
Established in 1992
Directs important environmental programs and promotes environmental preservation company-wide

Environmental Affairs Division

Secretariat of Environmental Committees
Established in 1998
Manages action policy and goals. Drafts environmental action plan and annual company-wide environmental policy

Executives in charge of Environmental Affairs Division
- Environment Group:
  Executive Vice President Kosuke Shiramizu
- Directors:
  Senior Managing Director Yasuhito Yamauchi
  Senior Managing Director Takashi Kamio
  Senior Managing Director Hiroyuki Watanabe

Environmental Product Design Assessment Committee

Chairman:
Senior Managing Director Hiroyuki Watanabe
Established in 1973
Studies key environmental preservation issues related to development, sales, use, and disposal of Toyota vehicles

- Fuel Efficiency and Exhaust Emissions Committee
- Noise Reduction Subcommittee
- Clean-Energy Vehicle Subcommittee
- Working Group by Topics
- ISO 14001 Promotion Subcommittee
- LCA Subcommittee

Production Environment Committee

Chairman:
Executive Vice President Kosuke Shiramizu
Established in 1963
Discusses and determines important issues such as company environmental preservation measures and policies, and promotes comprehensive environmental protection measures

- All-Toyota Production Environment Conference
  All-Toyota Production Environment Meeting*
- Regional Production Environment Conference

- Production Environment Technology Subcommittee
- Overseas Production Environmental Subcommittee
- Plant Production Environmental Subcommittee
- Environmental Manager by Region (Plant General Manager)
  Environmental Preservation Secretariat by Plant
- Production Environment Logistics Subcommittee

Recycling Committee

Chairman:
Executive Vice President Kosuke Shiramizu
Established in 1990
Studies design of easy-to-recycle vehicles and development of reuse and collection methods

- Research and Development Subcommittee
- Production Engineering Subcommittee
- Domestic Subcommittee
- Overseas Subcommittee
- Special Projects

*External organizations of the Production Environment Committee concerned with consolidated environmental management (38 Japanese production companies)

FY2001 Goals and Results of Activities

Following the achievement of the FY2000 goals, Toyota set new goals and began company-wide action in accordance with the Third Toyota Environmental Action Plan. In the first fiscal year of activities Toyota sought to reach the world's top levels in all areas, and almost all goals for the fiscal year were achieved.

In addition, Toyota promoted environmental management not only at Toyota Motor Corporation, but also focused on companies subject to consolidated accounting in Japan and overseas, including related companies. Environmental actions were steadily promoted in each country and region with each automotive-related production company setting quantitative goals and beginning specific action according to the Environmental Action Plan.

See pp. 58 - 70 for "Consolidated Environmental Management"

FY2001 Status of Company-wide Policies Regarding the Environment (Management)

Action policy	FY2001 Goal	Activity results	Page number in the 2002 report
1. Steady promotion of the Third Toyota Environmental Action Plan (FY2001 – FY2005) ● Start activities aiming to reach the world's top levels in all areas – product, production, recycling, management etc.	Steady achievement of FY2001 goals toward FY2005	● Almost all goals achieved in all areas, realizing a smooth start	P14 – P41
2. Enhanced global environmental management and establishment of systems ● Promote consolidated environmental management in Japan and overseas ● Global expansion of green purchasing (Purchasing Guidelines)	Consolidate performance results of automotive-related production companies and establish follow-up structures Create action plans at other types of businesses and consolidate them. Issue a procedure manual for global expansion	● Each automotive-related production company started specific action according to the Environmental Action Plan ● Overseas distributors and other types of businesses in Japan and overseas drafted Environmental Action Plans based on environmental guidelines and environmental impact of each company ● In November 2001, procedure manuals for the issue of Purchasing Guidelines were presented by Australia, the Middle East, South America and South Africa (scheduled to be expanded to suppliers in FY2002)	P58 – P70
3. Active responses to societal demands regarding the environment, in Japan and overseas ● Responses to regulations in Europe and Japan regarding end-of-life vehicles	Responses to regulations in Europe and Japan regarding end-of-life vehicles	● Studied the establishment of a network for collection and recycling end-of-life vehicles in each European country ● Actively participated in discussions regarding recycling laws in Japan, toward implementation of an effective recycling system	P39

Development and Design

Action policy	FY2001 Goal	Activity results	Page number in the 2002 report
1. Early and steady response to fuel efficiency goals ● Achieve 2010 Fuel Efficiency Standards in all vehicle weight categories, ahead of schedule by 2005	Introduce vehicles that meet the standards	● Steady introduction of vehicles that meet the standards	P14 – P15
2. Active promotion of reduction of exhaust emissions ● Achieve ultra low-emission levels in most vehicle series by 2005 ● Develop clean diesel vehicles	Active introduction of low-emission vehicles Steady technological development	● Increased introduction of Ultra Low-Emission Vehicles and Transitional Low-Emission Vehicles ● Developed and introduced a monitoring vehicle in Europe aimed at commercialization of the DPNR system	P16
3. Promotion of actions toward commercialization of clean-energy vehicles ● Enhance development and propagation of hybrid vehicles ● Promote the development of fuel cell hybrid vehicles	Development and market introduction Steady promotion	● Market introduction of the Estima Hybrid and Crown with mild hybrid system ● Development of FCHV-4; field evaluation tests in Japan and the U.S. (Announced the FCHV-3, FCHV-5 and FCHV-BUS 1)	P17 – P18
4. Environmental management, provision of information ● Promote environmentally conscious designs based on LCA ● Improve product environmental information	Steady promotion Improve information disclosure	● Implemented LCA at the vehicle development stage ● Issued the LCA Report and included LCA results in product catalogs	P19

Production/Procurement/Logistics

Action policy	FY2001 Goal	Activity results	Page number in the 2002 report
1. Reduction of CO_2 emissions ● Steady implementation of plans based on the scenario for 2005 ● Reduction of operational losses	Reduce total CO_2 emissions to 1.7 million tons or less	● Implemented integration of equipment with low operational load, and measures according to plan; total emissions volume: 1.63 million tons ● Reduced power consumption by switching off equipment when not in operation	P26
2. Reduction of substances of environmental concern (reinforced management of chemical substances) ● Reduce discharge volumes of paint solvents, aiming for world's top levels	Body painting process: Reduce VOC emissions on all lines to an average of 51g/m^2 or less; reduce discharge volumes of substances subject to PRTR (xylene, toluene) to 4,000 tons or less Plastic paint coating: Create a scenario for reduction of VOC emissions	● Implemented measures, according to plan, for reduction of discharge volumes of paint solvents Body painting process: VOC emissions on all lines reduced to 48g/m^2; discharge volumes of substances subject to PRTR (xylene, toluene) reduced to 3,100 tons Plastic paint coating: Created a scenario for reduction of VOC emissions	P27

Production/Procurement/Logistics

Action policy	FY2001 Goal	Activity results	Page number in the 2002 report
3. Reduction of waste and resource conservation ● Large reduction of combustible waste ● Actions to reduce resource loss	Reduce generation of combustible waste to 27,000 tons or less (56% reduction from FY1990) Create a scenario for resource conservation	● Implemented reduction of wastewater sludge according to plan Combustible waste: reduced to 22,000 tons Plans to achieve zero combustible waste at a model plant (Motomachi Plant) are being promoted ● Created scenarios for all processes – casting, forging, molding, painting, pressing etc.	P28 P29
4. Conservation of water resources ● Promote reduction of water consumption at vehicle assembly plants	Create plans for each plant	● Created scenarios for 4 vehicle assembly plants (elimination of the wet sanding process through improvements in paint quality, etc.)	P29
5. Maintenance of environmental management systems ● Steady promotion of plans to achieve goals at each plant ● Implement an internal audit of EMS in the Production Engineering Group, and expand EMS to overseas projects	Conduct internal audits at 8 plants and housing works Entire Production Engineering Group	● Improved the internal audit system to include a main audit and a follow-up audit, in order to increase the effectiveness of improvements ● Implemented internal audits according to plan	P23 P24
6. Environmental initiatives at overseas production businesses ● Establish and maintain consolidated environmental management systems ● Promote the achievement of FY2001 reduction goals at each plant	100% implementation rate	● Initiated Regional Production Environment Conferences to accelerate activities at each company Asia/Australia: Held in Thailand in March 2002 ● All companies completed the establishment of systems to collect data on environmental performance ● Steady reduction in total volumes of all indicators and unit consumption	P61 P61 P64 – P65
7. Reduction of environmental impact in logistics ● Promote reduction of CO_2 emissions volumes by increasing transportation efficiency ● Promote reduction in usage of packaging and wrapping materials	Reduce emissions volumes to 310, 000 tons or less Reduce usage volume to 64,000 tons or less	● Reduced CO_2 emissions volumes to 290,000 tons through improvements in loading efficiency, modal shifts and enhanced fuel efficiency ● Reduced usage of packaging and wrapping materials to 54,000 tons by expanding the use of returnable containers and simplifying specifications for wrapping	P32 – P33

Recycling and Sales/After Sales

Action policy	FY2001 Goal	Activity results	Page number in the 2002 report
1. Responses to the Automobile Recycling Law ● Develop recycling technologies for ASR ● Start research on dismantling ● Develop parts recycling technologies ● Promote recyclable designs ● Promote "reuse" and "rebuild" of parts	Develop technologies Propose items for design Study prospects and set goals Create plans Draft policies	● Implemented study of technologies ● Provided feedback of results of dismantling studies to design divisions ● Studied methods for dismantling and recycling of parts ● Made assessments regarding incorporating the above results into design ● Drafted policies for rebuilt parts	P37 – P39
2. Activities to reduce substances of environmental concern ● Steady responses to EU directives on end-of-life vehicles ● Promotion of global management	Steady promotion Establish a management system in Europe	● Promoted reduction of substances subject to regulations ● Introduced Environmental Purchasing Guidelines in Europe (April 2001)	P35 P62
3. Responses to establishing sales/after sales systems **Japan** ● Promote Toyota Japanese Dealer Environmental Guidelines ● Expand distribution of used parts through the use of e-commerce, and reuse of parts **Overseas** ● Promote the establishment of a system for collecting and recycling ELVs in conjunction with trends in industry and infrastructure in European countries ● Create an Environmental Action Plan for the sales area	Follow-up on the status of progress Expand nationwide Steady promotion Create a plan	**Japan** ● All Toyota dealers in Japan established systems and created action plans ● Completed introduction at parts distributors nationwide **Overseas** ● Promoted the study of establishment of a system for collecting and recycling ELVs in each country ● All countries issued Environmental Action Plans (26 companies)	P40 P36 P62 – P63

Environment-related Accidents and Lawsuits

As shown in the table to the right, there were four production-related accidents. Reviews of equipment and regulations were done to prevent recurrence.

Malfunctions in the air-fuel ratio sensor of the emission control system were discovered in a total of 31,115 units of the Harrier manufactured between December 15, 1997 and December 25, 1998 and the Windom manufactured between August 3, 1998 and December 25, 1998. Recall notices were submitted in May 2001. During FY2001, replacement of the concerned part and inspection and repair of related components were conducted on a total of 26,719 vehicles (85.9% implementation ratio).

Pending environment-related lawsuits include one in Japan relating to effects on health from automobile exhaust emissions and one in the United States regarding the performance of the fuel evaporator leak detection system.

■ Accidents in FY2001

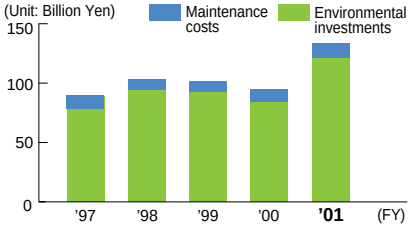
Accident		Measures to prevent recurrence
May	Abnormal wastewater quality (Meiko region)	Expanded use of denitrogenation devices
May	Oil spill on public road (Head Office region)	Established guidelines for moving equipment out and held training for persons from the transportation company
August	Fire from dust at waste disposal site (Head Office region)	Suspended direct disposal of inflammable dust
September	Spillage of waste on public road (Tahara region)	Added new items (such as check of vehicle hatch and the status of loading) to inspection sheets

Environmental Cost Management

Environmental Costs in FY2001

Total environmental costs were 133.9 billion yen, comprising 1.6% of net sales. There was a marked increase in expenses on research and development related to fuel cell vehicles, and on improving fuel efficiency and reducing emissions of conventional engines, resulting in an increase in environmental costs from the previous fiscal year. Beginning with this report, a breakdown of environmental investment will be disclosed and provided in a format that conforms to the Environmental Accounting Guidelines laid down by the Ministry of the Environment. Moreover, Toyota is working to understand not only its own environmental costs and effects but also those of its consolidated subsidiaries. As a first step, Toyota has disclosed the total effects of six of its body manufacturers that are commissioned to produce Toyota vehicles.

■ Trends in Maintenance Costs and Environmental Investments



Analysis of Effects

Economic Effects Associated with Environmental Investment

The effects of environmental costs were identified and computed only for those items that could be backed by solid data, such as "reductions in energy costs from energy conservation measures" and the "reduction in processing costs through waste volume reductions," etc. Total savings in FY2001 were 3.1 billion yen.

Economic effects based on hypothetical accounting methods including "contributions to product value addition," "improved corporate image" and "risk avoidance," have not been calculated due to difficulties in obtaining solid data.

Calculation of Customer Effects

In addition to the effects of environmental actions that occur within the business areas listed to the left, there are also "customer effects" enjoyed by customers during the use stage. A trial calculation of the savings in gasoline expenses, as a result of the adoption of fuel efficient engines in new models and models that underwent complete redesign, resulted in total customer effects of 3.7 billion yen during FY2001.

■ Customer Effects in FY2001

Savings in gasoline expenses: 3.7 billion yen Reduction of CO2 equivalent: 83,000 tons

∑[(<10,000km>[1] / <fuel efficiency of conventional vehicles>[2] – <10,000km> / <fuel efficiency of new vehicles>[2]) x <106 yen>[3] x <number of Toyota vehicles sold in FY2001*>]

1 Average passenger car annual driving distance as indicated in the Ministry of Land, Infrastructure and Transport's "Automobile and Transport Statistics"
2. Based on 10-15 Japanese test cycle
3. Nationwide average gasoline price per liter (including consumption tax) in FY2001 according to the Oil Information Center, Japan
*In FY2001, a total of 16 vehicle series (38 models) were new or underwent complete redesign. In cases where no conventional vehicle was available for comparison, however, the new model was omitted from the calculation (six models excluded).

■ Economical Effects

(Unit: Billion Yen)

	FY1998	FY1999	FY2000	FY2001	FY2001 results of 6 body manufacturers*
Reduction in energy costs	3.2	2.8	3.1	2.0	1.5
Reduction in waste processing costs	0.3	0.3	0.5	0.5	0.3
Leasing fee for environmental products, etc. (includes e-com leasing fee, etc.)	0.2	1.3	0.8	0.6	0.9
Total	3.7	4.4	4.4	3.1	2.7

■ Actual Results of Environmental Expenses

<Actual Results based on Toyota's Format>

(Unit: Billion Yen)

Classification	Item		Purpose	FY1998	FY1999	FY2000	FY2001
Maintenance costs	Expenses related to environmental measures		Waste processing expenses	2.1	2.0	2.2	2.6
			Wastewater treatment expenses	0.7	0.7	0.6	0.6
			Atmospheric pollution and odor abatement expenses	—	—	1.8	1.5
			Global environmental preservation expenses	—	—	0.6	0.7
	Awareness-building expenses		Advertising, public relations, etc.	3.6	4.0	3.7	4.7
	Professional environmental staff expenses		Personnel expenses	1.2	1.5	1.5	1.6
	Environmental restoration expenses		Recall	1.0	—	—	0.7
			Soil and groundwater remediation	0.2	0.3	0.3	0.3
	Subtotal for maintenance costs			8.8	8.5	10.7	12.7
Environmental investments[1]	Research and development expenses[2]			64.9	65.4	60.2	97.9
	Recycling-related expenses			3.0	1.5	1.8	1.8
	Other expenses (social contribution, ISO certification expenses, educational & training expenses, etc.)			1.6	1.9	1.9	1.2
	Plant and equipment investment	Plant and equipment investment primarily for environmental action	Prevention of global warming	2.2	2.4	2.4	1.4
			Waste processing	0.6	1.1	2.1	1.6
			Pollution prevention	1.5	1.1	0.7	1.0
			Other	1.8	3.1	2.1	1.0
				6.1	7.7	7.3	5.0
		Expenses for environmental action, included in normal plant and equipment investment		19.2	16.1	13.3	15.3
	Subtotal for environmental investments			94.8	92.6	84.5	121.2
Total				103.6	101.1	95.2	133.9

1. "Environmental investments" according to Toyota's classification includes capital investments as well as those expenses that will have lasting effects
2. Some of the standards for R&D expenses have been revised

<FY2001 Actual Results based on the Ministry of the Environment's Format>

(Unit: Billion Yen)

Classification		Toyota		6 body manufacturers*	
		Investments	Expenses	Investments	Expenses
(1) Business area costs	[1] Pollution prevention cost	1.0	2.1	1.2	2.4
	[2] Global environmental cost	16.8	0.7	5.2	0.5
	[3] Resource circulation cost	1.6	2.6	0.5	2.1
(2) Upstream/downstream costs	Amount allocated by recycling-related industry organizations	0.4	1.6	—	0.2
(3) Management activity costs	Environmental advertisements, environmental report publication costs, expenses for professional environmental staff, etc.	—	6.6	0.2	2.1
(4) Research and development costs	R&D expenses for reducing substances of environmental concern	—	97.9	0.5	28.5
(5) Social activity costs	Contribution to environmental preservation organizations, etc.	—	0.7	—	0.2
(6) Environmental damage remediation costs	Soil and groundwater remediation costs, etc.	0.9	1.0	—	0.1
Total		20.7	113.2	7.6	36.1
		133.9		43.7	

*6 body manufacturers: Araco, Kanto Auto Works, Daihatsu Motor, Toyota Auto Body, Hino Motors, and Toyota Motor Kyushu
(Calculations made on the basis of standards used by each company)

(Reference) FY2001 Total R&D expenses: 527.3 billion yen
Total plant and equipment investment: 257.9 billion yen

Effects of Reducing Environmental Impact (Quantum Effects)

Reduction of environmental impact is the cumulative effect of past environmental investments. Specific effects of improvements are summarized in this report.

See pp. 14 - 21 for effects of research and development
See pp. 22 - 31 for effects of plant and equipment investments
See pp. 34 - 39 for effects of recycling

Eco-efficiency

Eco-efficiency, a term created by combining economic and ecological efficiency and proposed by the World Business Council for Sustainable Development (WBCSD), is an indicator of the relation between the "value of products or services produced by a company" and their "environmental impact." The objective is to minimize the environmental impact from business activities while maximizing the value created.

Toyota has decided to calculate its eco-efficiency according to the formula indicated on the right. CO_2 emissions volume and the volume of waste generated during the production of automobiles were used to determine the environmental impact starting with data from FY1990. Over 11 years, the CO_2 index has increased by about 40%, and the waste index by approximately 2.3 times. In the future, Toyota will continue to promote actions to improve eco-efficiency.

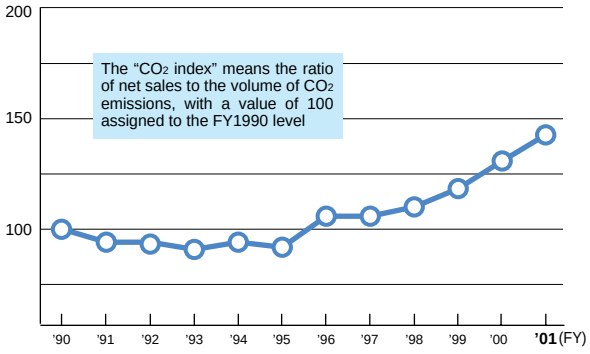
See p. 46 for WBCSD

■ Eco-efficiency Formula

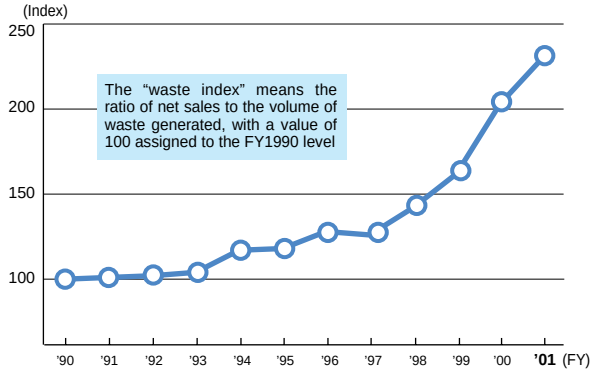
$$\text{Eco-efficiency} = \frac{\text{Net sales}}{\text{Environmental impact}}$$

■ Trend in Eco-efficiency

<CO_2 Index due to Automobile Production>



<Waste Index due to Automobile Production>



Basic Policy

Environmental costs are defined as expenditures for the purpose of reducing the environmental impact caused by the company's business activities and related expenditures. Toyota's accounting is based on a classification of environmental costs into environmental investments and maintenance costs.

The reasoning behind this is that current and future environmental impact can be reduced through environmental investments. Maintenance costs are decreased, resulting in overall minimization (high efficiency) of environmental costs. Toyota assesses and calculates environmental costs on a cash-flow basis. Therefore, plant and equipment investments are treated as investments and depreciation expenses are not computed or included in environmental costs.

Method of Assessment of Environmental Costs

Toyota assessed and calculated the costs expended with the principal objective of improving the environment, in terms of actual expenditure. In expenses for normal research and construction activities, it is difficult to distinguish clearly between expenses that are environmental in nature and those that are not. Specifically speaking, these include improving fuel efficiency or reducing emissions as part of research and development costs, and contributions to reducing environmental impact as part of equipment investments on the production line. In these cases, the total expenditure was calculated as the environmental portion of the cost according to a consistent standard.

Environmental Projects Budget Management System

To provide a more mobile response to cross-divisional environmental projects, Toyota introduced the Environmental Projects Budget Management System in 1998.

Due to the broad range of environmental issues and heightened social demands, providing environment-related budgets within the framework of the regular business budgets of each division and group is no longer effective for making rapid responses.

The FY2001 Environmental Projects budget includes the "Eco-Project Implementation Budget" and the new "Clean Diesel Large-Scale Monitoring Project," among other things.

■ Classification and Definitions of Environmental Costs

Environmental investment	Expenditures for the purpose of proactively reducing environmental impact, whose effects are judged to extend beyond the current term and into the future
Maintenance cost	Expenditures other than environmental investment. These are routine expenditures involved in environmental maintenance (support and management expenses, etc.) whose effects are limited to the current fiscal year or represent environmental restoration expenses.

Development and Design

Hiroyuki Watanabe
Senior Managing Director and Chairman
of Environmental Product Design Assessment Committee

Hiroyuki Watanabe joined Toyota in 1967. He became a member of the board of directors in 1996 following various assignments, including that of Chief Engineer for the Crown, and later led efforts to develop electric vehicles. When he became Managing Director in June 1999, he was also appointed Chairman of Environmental Product Design Assessment Committee. In addition, he has been overseeing Toyota's efforts to develop fuel cell systems. In 2001, he was appointed Senior Managing Director.

Based on the Third Environmental Action Plan, Toyota implemented various actions in the first fiscal year of this plan. The results of the various actions Toyota took in FY2001 are listed below.

(1)Achieved the 2010 Fuel Efficiency Standards in four categories.
(2)Increased the number of models meeting the Approval System for Low-Emission Vehicles (87% of the total production).
(3)Increased the number of vehicle series that comply with both the 2010 Fuel Efficiency Standards and the Approval System for Low-Emission Vehicles to 50% of total production.
(4)Increased the number of hybrid vehicles to three vehicle series. Achieved a cumulative sales total of 100,000 units.
(5)Continued developmental efforts toward the commercialization of fuel cell hybrid vehicles.
(6)Implemented LCA for two new vehicle series and published the results in catalogs, etc.

Organization Chart (As of March 2002)

Environmental Product Design Assessment Committee
Chairman:
Senior Managing Director Hiroyuki Watanabe
Established in 1973
Studies key environmental preservation issues related to development, sales, use, and disposal of Toyota vehicles

Fuel Efficiency and Exhaust Emissions Committee
Promotes technological development related to improvement of fuel efficiency and exhaust emissions

Noise Reduction Subcommittee
Plans promotion of technological development related to reduction of vehicle noise

Clean-Energy Vehicle Subcommittee
Promotes the development and introduction of clean-energy vehicles

Working Group by Topics
(Exhaust emissions reduction, alternative CFC reduction, etc.)

ISO 14001 Promotion Subcommittee
Creates and maintains environmental management system of development and design areas and aims for improvement

LCA Subcommittee
Promotes lifecycle assessment and maintains LCA structure

Product Environmental Management System

In FY2001, as Toyota developed products, it applied an environmental management system that is based on ISO 14001 to the following five areas: improving fuel efficiency, reducing exhaust emissions, reducing external automobile noise, reducing substances of environmental concern, and improving recoverability.

With regard to internal audits, Toyota reviewed its evaluation standards, deciding to consider even those items rated "recommended improvements" but which required correction, to be minor non-compliance, and implemented thorough corrective actions.

A maintenance audit by an external auditing body found no problems and concluded that Toyota is appropriately applying, maintaining and managing the EMS.

Audit Results

	Internal audit	Maintenance audit
Serious non-compliance	0	0
Minor non-compliance	12	0
Recommended improvements	6	
Items to be monitored		0

Main indications: Points related to procedures and maintenance of written matter

*One area addressed in FY2000 was the reduction of air conditioner refrigerants. Toyota exceeded its goal and achieved an average reduction of 20% , thus completing activities. This area was not addressed in FY2001.

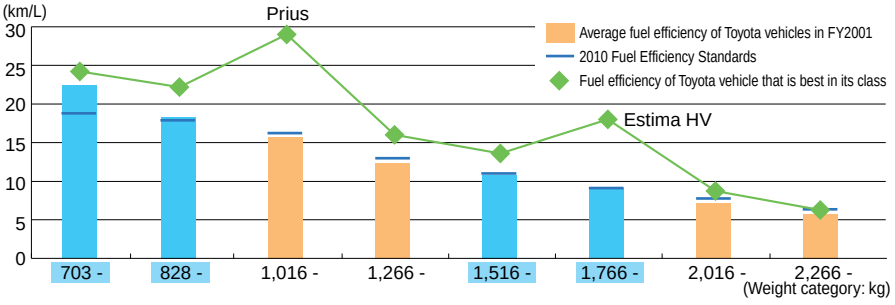
See pp. 34 - 35 for "Improving Recoverability" and "Reduction of Substances of Environmental Concern"

Improving Fuel Efficiency

FY2001 Product EMS Goal

Achieve the 2010 Fuel Efficiency Standards on all vehicle weight categories ahead of schedule by 2005

2010 Fuel Efficiency Standards and Actual Fuel Efficiency of Toyota Vehicles



Vehicles that Meet the 2010 Fuel Efficiency Standards

In FY2001, Toyota achieved the 2010 Fuel Efficiency Standards in four categories. As a result, the number of vehicles (gasoline-powered passenger vehicles) meeting the 2010 Fuel Efficiency Standards reached 51% of total production. In FY2001, 11 out of 16 vehicle series, including both new models and those that underwent complete redesign, cleared the New 2010 Fuel Efficiency Standards.

Models that Meet 2010 Fuel Efficiency Standards among FY2001 New Models and Those that Underwent Complete Redesign

Weight category (Vehicle weight)	Fuel efficiency standard (km/L)	FY2001 average fuel efficiency	Qualifying vehicle series of FY2001 new models and those that underwent complete redesign
703 - 827	18.8	22.4	———
828 - 1,015	17.9	18.3	———
1,016 - 1,265	16.0	15.7	Corolla Spacio,* Premio/Allion
1,266 - 1,515	13.0	12.4	Noah/Voxy, Premio/Allion
1,516 - 1,765	10.5	10.6	Ipsum,* Brevis, Verossa,* Crown with mild hybrid system, Noah/Voxy, Mark II Blit*
1,766 - 2,015	8.9	9.1	Estima Hybrid
2,016 - 2,265	7.8	7.5	———
2,266 -	6.4	6.1	———

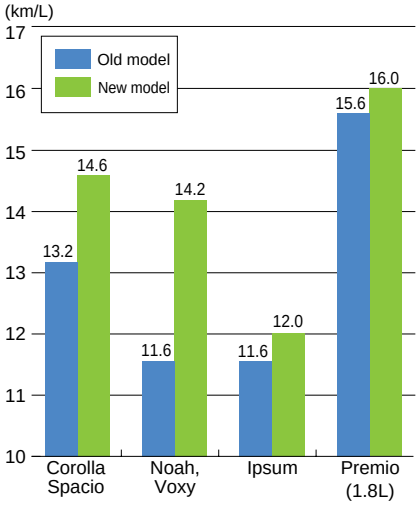
*Some of the qualifying vehicle series may not meet the standards depending on models and specifications
* indicates a category that has achieved 2010 Fuel Efficiency Standards
*Vehicles that achieved the efficiency standards before FY2001 are not included

Increasing the Number of Vehicles with Fuel Efficient Engines

Toyota expanded the use of newly developed gasoline engines with enhanced fuel efficiency achieved through various means including weight reduction and combustion efficiency improvement, as well as the new direct-injection gasoline engine with a larger lean-burn region. Toyota also installed VVT-i,[1] which improves fuel efficiency and produces cleaner exhaust emissions, in the engines of all new models and those that underwent complete redesign.

1. VVT-i (Variable Valve Timing-Intelligent): Mechanism that continuously optimizes intake valve opening/closing timing based on the engine's operational condition

■ Fuel Efficiency Comparison between Selected Old and New Models



Improved Power Transmission

Toyota is also working to improve fuel efficiency by increasing the efficiency of power transmission to the drivetrain.

A high-efficiency automatic transmission equipped with a flex lock-up function was incorporated into all new models as well as those that underwent complete redesign. Toyota installed a CVT in the Premio and Allion, and motor-driven power steering in the Corolla Spacio. The four-wheel drive versions of the Premio, Allion, Camry and WiLL Vs have been fitted with the Flex Fulltime 4WD[2] mechanism.

2. Flex Fulltime 4WD : Electronically-controlled 4WD mechanism that improves fuel efficiency by optimally allocating torque between the front and rear wheels in accordance with driving conditions

Lighter Weight and Lower Air Resistance

Fuel efficiency can also be improved by reducing vehicle weight and air resistance while driving. In terms of vehicle weight reduction, some of the major initiatives taken by Toyota include switching to different or lighter materials, developing bodies with higher rigidity, and using aluminum and new TSOP[3] in vehicle bodies and parts.

To reduce the air resistance of its vehicles, Toyota made the floor panels flatter and began using rectifying parts for improving aerodynamic performance. Also, in the Camry, Toyota adopted a smooth flash surface body which has a smaller number of steps on the body surface, achieving a Cd (Coefficient of drag) value of 0.28.

3. TSOP (Toyota Super Olefin Polymer) : A thermoplastic polymer with excellent recoverability developed by Toyota. The new TSOP has enhanced strength and rigidity and is easier to mold. Use of the new TSOP also contributes to reduction in vehicle weight.

Use of Idling Stop System

Toyota developed a new system called the "Toyota Stop and Go System" which simultaneously reduces fuel consumption and exhaust emissions while the vehicle is stopped.

This system eliminates idling by automatically stopping the engine when the vehicle comes to a stop at a traffic signal, etc. Toyota installed a manual version in the Vitz and an automatic version in the Crown Comfort,[4] and others. The Vitz, with this new system installed, shows a fuel efficiency improvement of approximately 7%.

4. Crown Comfort's fuel efficiency cannot be compared because it is an LPG vehicle and no fuel efficiency evaluation value is available from the Ministry of Land, Infrastructure and Transport

Product Highlight

Increasing the Number of Vehicles that Meet the 2010 Fuel Efficiency Standards and the Ultra Low-Emission Vehicle Level

In FY2001, four vehicle series - the new gasoline-powered Premio and Allion, the Vitz and the Platz with minor design changes - cleared the 2010 Fuel Efficiency Standards, and also achieved an exhaust emission level that is 75% lower than the 2000 Exhaust Emissions Standards in the Ministry of Land, Infrastructure and Transport's "Approval System for Low-Emission Vehicles," thus qualifying as Ultra Low-Emission Vehicles. As a result, these models, along with hybrid vehicles, electric vehicles, methanol vehicles, and CNG vehicles, were qualified as satisfying the government's fleet standards based on the Law on Promoting Green Purchasing.

See p. 21 for the Law on Promoting Green Purchasing

Premio
Fuel efficiency: 1.5L 2WD: 16.4km/L 1.8L 2WD: 16.0km/L

Platz
Fuel efficiency: 1.0L 2WD: 19.6km/L

Allion
Fuel efficiency: 1.5L 2WD: 16.4km/L 1.8L 2WD: 16.0km/L

Vitz
Fuel efficiency: 1.0L 2WD: 19.6km/L

*Fuel efficiency based on the Ministry of Land, Infrastructure and Transport's 10 –15 Japanese test cycle. Values are for automatic transmission vehicles.

Reducing Exhaust Emissions

FY2001 Product EMS Goal

Set voluntary standards in response to the Exhaust Emission Standards specified in the Safety Regulations for Road Vehicles, the Approval System for Low-Emission Vehicles, and for vehicles in the seven Tokyo area municipalities

Increased Introduction of Low-Emission Vehicles

Toyota increased the number of models that meet the Ministry of Land, Infrastructure and Transport's Approval System for Low-Emission Vehicles to 124 models in March 2002, which accounts for 87% of total production. Toyota will continue making development efforts in order to achieve the Ultra Low-Emission level in most of its vehicle series by 2005.

■ Number of Models and Percentage of Total Production that Met the Approval System for Low-Emission Vehicles in FY2001

Category	Reduction level	No. of models (percentage of total production)
☆ Transitional Low-Emission Vehicles	25% lower than standard levels for 2000	111 (78.5%)
☆☆ Low-Emission Vehicles	50% lower than standard levels for 2000	1 (0.2%)
☆☆☆ Ultra Low-Emission Vehicles	75% lower than standard levels for 2000	12 (8.2%)

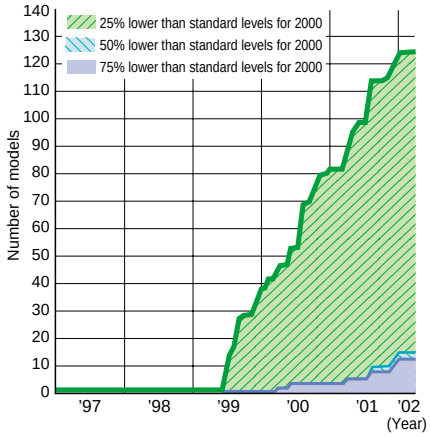
The number of vehicle series that meet both the Approval System for Low-Emission Vehicles and the 2010 Fuel Efficiency Standards reached 50% of total production.

■ Number of Models and Percentage of Total Production of Vehicles that Meet Both the Approval System for Low-Emission Vehicles and the 2010 Fuel Efficiency Standards (Compliant with the Law on Promoting Green Purchasing)

	Category	No. of models (percentage of total production)	
		FY2000	FY2001
2010 fuel efficiency standards	☆☆ Transitional Low-Emission Vehicles	22 (21.1%)	42 (44.3%)
	☆☆ Low-Emission Vehicles	0 (0.0%)	1 (0.2%)
	☆☆☆ Ultra Low-Emission Vehicles	1 (0.9%)	7 (5.8%)

In terms of technologies for achieving cleaner exhaust emissions from gasoline-powered vehicles, Toyota has been further optimizing the NOx storage reduction three-way catalytic converter, the air-fuel ratio compensation system, the ignition timing control system, and the fuel evaporation gas suppression system, etc. This has resulted in cleaner exhaust emissions, especially during cold starts.

■ Trend in the Number of Gasoline Vehicle Models Achieving Exhaust Standards



■ Vehicles that Met the Approval System for Low-Emission Vehicles in FY2001

Exhaust emission level	☆ Transitional Low-Emission Vehicle
Vehicle series	No. of models
bB OPEN DECK	1
WiLL Vs	4
Altezza Gita	4
Ipsum	2
Windom	1
Corolla Spacio	3
Gaia	1
Crown*	10
Nadia	2
Noah/Voxy	2
Vista/Vista Ardeo	2
Brevis/Progrès	2
Premio/Allion	1
Mark II Blit	4
Total	39

Exhaust emission level	☆☆ Low-Emission Vehicle
Vehicle series	No. of models
Crown with mild hybrid system	1
Total	1

Exhaust emission level	☆☆☆ Ultra Low-Emission Vehicle
Vehicle series	No. of models
Estima Hybrid	1
Camry	2
Soarer	1
Platz	1
Premio/Allion	3
Vitz	1
Total	9

*Crown includes Crown Sedan, Crown Estate, Crown Comfort, Crown patrol car, Comfort

Cleaner Diesel Engines

Toyota made developmental progress toward the commercialization of the DPNR[1] (Diesel Particulate NOx Reduction) system, a new catalytic converter system for diesel vehicles, in 2003.

The DPNR system is a new technology for cleaning the exhaust emissions from diesel engines, for which Toyota developed the basic technology in 2000. This system can continuously and simultaneously clean the PM[2] and NOx contained in diesel exhaust emissions.

In March 2002, the DPNR system was installed in the Avensis, a medium-size sedan for the European market, and monitoring began in seven countries, including Germany and the U.K. Monitoring will be carried out using a total of 60 vehicles over a period of one-and-a-half years. After the system's durability under various operating conditions is confirmed through this monitoring program, Toyota plans to work on development of the DPNR system aimed at early introduction into other countries.

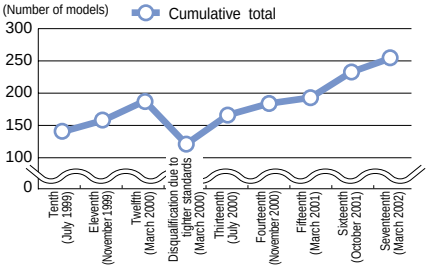
Toyota's oxidizing catalytic converter was approved as a PM-reduction device for diesel vehicles already on the road, mandated by Tokyo Metropolitan regulations. Toyota will begin marketing this device, which reduces PM by approximately 40%, in the summer of 2002.

1. DPNR
   See p. 24 of Environmental Report 2001, for more information on the DPNR system
2. PM (Particulate Matter):
   Granular material consisting mainly of fly ash and unburned hydrocarbon

Sixty-eight Toyota Models Certified as Low-pollution Vehicles

In FY2001, Toyota again submitted its vehicles to the low-pollution vehicle designation system administered by seven Tokyo area municipalities[3], and had 68 more of its models certified, reaching a cumulative total of 256 models. Toyota also submits its vehicles to the low-pollution vehicle designation system administered by six Kyoto, Osaka and Kobe area municipalities.

■ Trend in Number of Vehicles Certified as Low-Pollution Vehicles



3. See p. 33 of Environmental Report 1998, for details on the low-pollution vehicle designation system administered by seven Tokyo area municipalities

Reducing External Automobile Noise

FY2001 Product EMS Goal

Meet Toyota's voluntary standards on external automobile noise set in response to permissible levels specified in the Safety Regulations for Road Vehicles

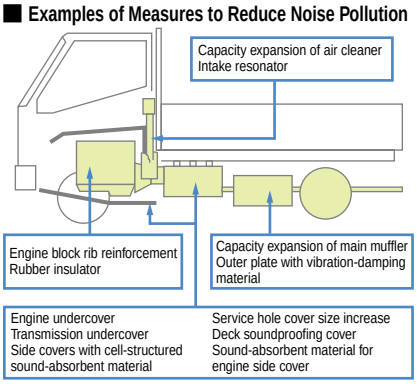
1. Passenger cars....achieve 100% by 2001
2. Commercial vehicles....achieve 100% by 2002

Toyota has worked continuously on improvements to attain the goal of meeting its voluntary standards on external automobile noise in all its vehicles. In FY2001, 11 passenger car series, 3 small truck series, and 3 medium truck series (for a total of 17 vehicle series) met the latest standards. All of Toyota's passenger cars have already achieved this goal, and new models and models that undergo complete redesign are also being made compliant. Toyota is now focusing on commercial vehicle series, which structurally pose a more difficult challenge for external noise reduction than passenger cars.

Reducing External Automobile Noise in Commercial Vehicles

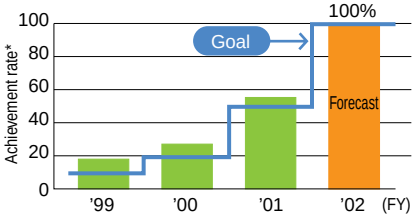
To reduce external engine noise, Toyota used such measures as increasing the engine block strength and installing an engine undercover equipped with sound-absorbent materials. Toyota has improved sound-absorbing performance using a newly developed sound-absorbent material with a cell structure for the undercover and sidecover. Intake system noise has been reduced by using an intake resonator while a larger-capacity muffler reduces exhaust noise, thereby reducing external automobile noise.

■ **Examples of Measures to Reduce Noise Pollution**



Examples of Noise Reduction Measures in the Dyna 150

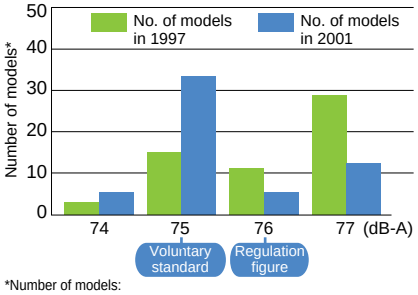
■ **Status of External Noise Reduction Measures in Small Trucks**



*"Achievement rate" means the number of vehicle series meeting the tighter regulations as a percentage of all Toyota small trucks (11 vehicle series)

*The following vehicle series met the regulations in FY2001:
Passenger cars:
Brevis, Verossa, Crown with mild hybrid system, Premio, Allion, Camry, Windom, WiLL Vs, Ipsum, Estima Hybrid, Noah, Voxy (11 vehicle series)
Small trucks:
Hilux, Land Cruiser 70, Dyna 100/150 (3 vehicle series)
Medium trucks:
Dyna 150, Urban Supporter, Coaster (3 vehicle series)

■ **Trends in Acceleration Noise of Small Trucks**



*Number of models:
The total of combination of engine and transmission by vehicle series

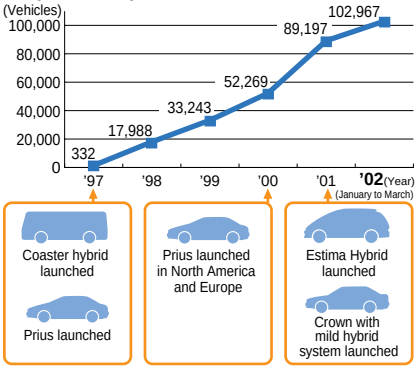
Clean-energy Vehicles

Sales of Hybrid Vehicles Reach a Cumulative Total of 100,000 Vehicles

With the market introduction of the Estima Hybrid and the Crown with mild hybrid system, Toyota expanded its hybrid passenger car lineup to three vehicle series. In the period since the introduction of the Prius until the end of March 2002, cumulative sales of Toyota's hybrid vehicles worldwide reached 100,000 units. Sales of the Estima Hybrid, launched in FY2001, reached approximately 12,000 units while approximately 2,000 units of the Crown with mild hybrid system have been sold.

Estima Hybrid

■ **Cumulative Sales Results of Hybrid Vehicles (Worldwide)**



See p.63 for details on overseas sales results of the Prius

The Toyota Hybrid System-Mild (THS-M) consists of a small motor (which also acts as a generator) directly connected to the engine via an auxiliary system drive belt and a 36V battery (the first in the world) suitable for driving this motor, resulting in an easy-to-install, simple structure. Further, the motor allows the air conditioning to run even during idling stops, maintaining driving comfort.

3.0-liter Crown Royal Saloon equipped with THS-M (mild hybrid system)

■ **Functional Characteristics of Mild Hybrid**

When the vehicle is starting	The motor is used for starting and the engine is also started
During normal driving	The engine drives the vehicle
During deceleration and braking	Recovers electricity into the battery through energy regeneration
When the vehicle comes to a stop	The engine is automatically shut off and the motor drives the air conditioning system

Toyota will continue to promote the development and propagation of hybrid vehicles.

Number of Clean-energy Vehicles Sold

With the expansion of hybrid vehicles, Toyota sold approximately 24,000 clean-energy vehicles in FY2001 in Japan, which accounted for 1.4% of all Toyota vehicles sold.

■ **Number of Toyota's Clean-energy Vehicles Sold (in Japan)** <Unit: Vehicles>

	FY1999	FY2000	FY2001
Electric vehicles	46	19	56
Hybrid vehicles	14,289	12,263	23,373
CNG vehicles	178	166	187
Total	14,513	12,448	23,616
Percentage relative to all Toyota vehicles sold	0.9%	0.7%	1.4%
Total number of Toyota vehicles sold	1,674,631	1,767,422	1,677,044

Introduction of Clean-energy Vehicles into the Company Fleet

Toyota has been further promoting the introduction of clean-energy vehicles into its own fleet of vehicles, adding 38 more vehicles for a total of 367. The introduction rate was 20% of the total number of vehicles owned.

Plans Announced for Limited Introduction of Fuel Cell Hybrid Vehicles

Seven FCHV-4 vehicles equipped with high-pressure hydrogen tanks are undergoing field evaluation tests in Japan and the U.S. Cumulative distance driven exceeded 75,000km, as of March 2002. Performance data on the vehicles is being collected with the aim of commercializing FCHVs.

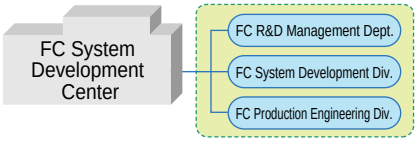
Toyota also announced the FCHV-5, which uses clean hydrocarbon fuel (CHF) and is equipped with an onboard reformer.

Further, Toyota jointly with Hino Motors, Ltd., developed a large city bus, the FCHV-BUS1, which uses high-pressure hydrogen as fuel, in order to improve urban environments through the use of public transportation.

For fuel cell vehicles to be widely accepted, issues such as the establishment of hydrogen infrastructures and the development of regulations and standards must be addressed. Toyota is actively participating in tackling these issues as well.

In January 2002, Toyota strengthened its internal development organization by establishing the FC System Development Center, and further improved system reliability and other features of FCHVs. Toyota has announced that it will make a limited introduction of fuel cell hybrid vehicles in Japan and the U.S. around the end of 2002.

■ **FCHV Development Organization**



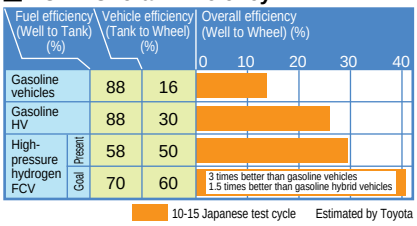
See pp. 54 - 57 for "Special Story"

FCHV-4 equipped with high-pressure hydrogen tank

Toward Achieving an Overall Efficiency Three Times More than that of Gasoline Vehicles

When evaluating the efficiency of vehicles with varying fuel energies, it is necessary to consider overall efficiency* from the drilling and refining of fuel to consumption by automobiles (Well to Wheel). Although fuel cell hybrid vehicles that use high-pressure hydrogen have a lower fuel efficiency than gasoline vehicles, their high vehicle efficiency makes the overall efficiency at the current technology level roughly twice that of gasoline vehicles. Toyota is proceeding with developmental efforts aimed at producing fuel cell hybrid vehicles whose overall efficiency is 3 times better than gasoline vehicles and 1.5 times better than gasoline hybrid vehicles.

■ **FCHV Overall Efficiency**



*Overall efficiency:
The efficiency obtained by multiplying "fuel efficiency" from the fuel extraction stage up to transportation to a gas station by "vehicle efficiency" of an individual vehicle

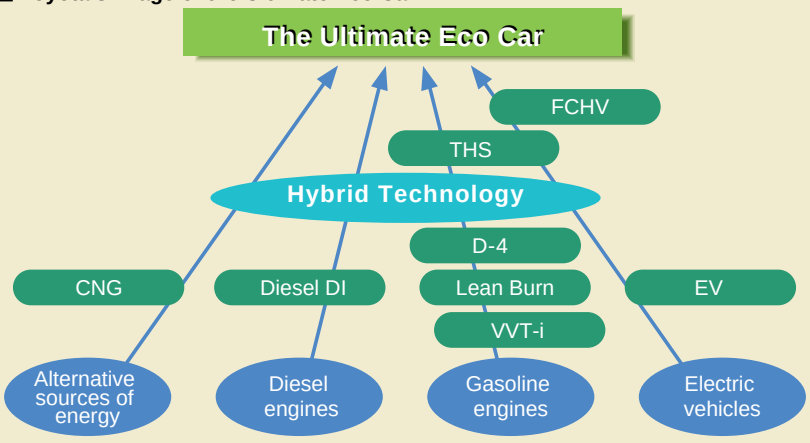
Expansion of Hybrid Technology

Core Technology for the Ultimate Eco Car

In its pursuit to develop the "ultimate eco car," Toyota is also engaged in technical development on multiple fronts including gasoline vehicles, diesel vehicles, alternative energy vehicles such as those based on CNG, and fuel cell vehicles with reduction of CO_2 and exhaust emissions as the main objective.

In particular, Toyota's hybrid technology, which is highly rated in terms of overall efficiency, is the key technology for Toyota's eco car development. Therefore, Toyota plans to expand the application of this technology to a wide variety of vehicle series, with the goal of producing 300,000 hybrid vehicles a year.

■ **Toyota's Image of the Ultimate Eco Car**



LCA

Prior Assessment Using LCA in the Early Stages of Development

Toyota carried out LCA (LifeCycle Assessment) in the final development stage of the Premio and Allion, and verified that these models were causing less environmental impact than conventional vehicles. For other vehicles that are in the early stages of development, Toyota carries out prior assessment of environmental impact using LCA methods and utilizes the results at every stage from production to disposal in order to enhance the environmental performance of its vehicles.

Promoting Information Disclosure for Better Understanding and Dissemination

Toyota had been disclosing its LCA information to industry experts through academic society reports, etc., and in FY2001 it began disclosing LCA information to more people in order to gain their understanding. Beginning with the Premio and Allion, Toyota started disclosing LCA information in product catalogs, and also issued a booklet entitled "Toyota LCA Report" which describes the actions Toyota has taken so far. Toyota distributed it at both the Tokyo and Frankfurt Motor Shows and has also made it available through its Web site (Japanese only).

Establishing the LCA System

In order to promote a better understanding of LCA of Toyota vehicles among both employees and other related persons, Toyota held an LCA exhibit and lecture in October 2001, which was attended by approximately 1,800 people, showcasing specific examples from Toyota and its parts manufacturers.

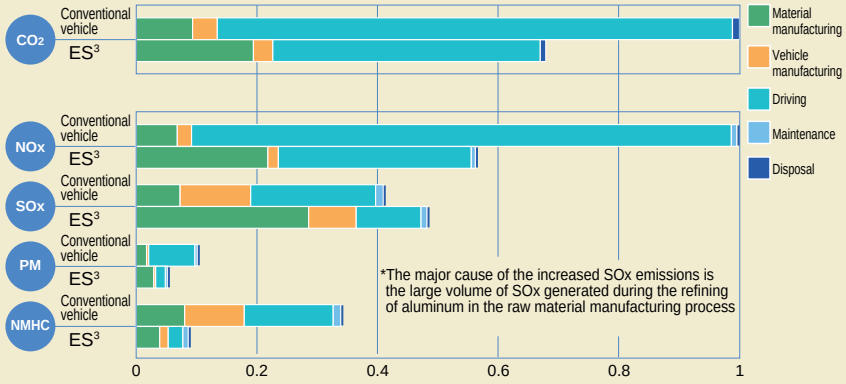
LCA exhibition

LCA Using Experimental Vehicle

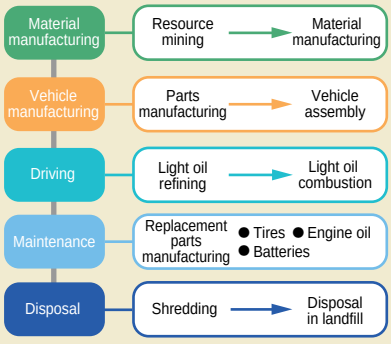
Implementation at Earlier Stages of Vehicle Development

Based on the belief that implementing LCA at an earlier stage of vehicle development is more effective in understanding the vehicle's environmental impact, Toyota carried out LCA on the compact diesel car "ES^3" which was exhibited at motor shows. The inventory analysis result showed that the environmental impact in the raw material manufacturing stage was greater than other diesel vehicles in the same class because aluminum is extensively used in this experimental vehicle. However, it was verified that the total environmental impact for the entire life of the vehicle, including other stages, would be smaller. In particular the vehicle produces 32% less CO_2 emissions and 44% less NOx emissions than other diesel vehicles in the same class.

■ ES^3 LCA Evaluation Results (Substances Released Into the Atmosphere: Index)



■ Evaluation Scope



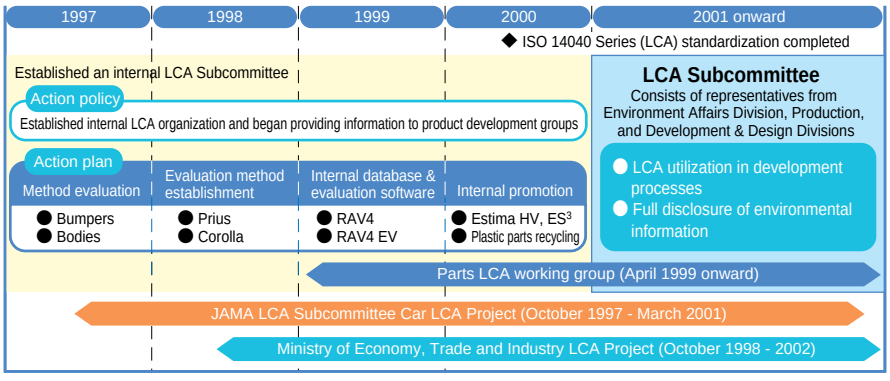
■ Specification Comparison between ES^3 and a Diesel Vehicle in Same Class

(Fuel efficiency and exhaust emissions were measured in the EC mode)

Vehicle name	Vehicle weight	Fuel efficiency	Exhaust emissions
ES^3	700kg	2.7L/ 100km	NOx: 0.08g/km PM: 0.005g/km
Diesel vehicle in same class[1]	900kg	5.2L/ 100km	NOx: 0.25g/km[2] PM: 0.025g/km

1. Vehicle having the same size and engine displacement as ES^3
2. EU-Step 4 regulatory standard
   Assumes a lifetime travel distance of 150,000km (operation model: EC mode, usage period: 10 years). The data on electricity used during manufacturing, etc. is based on an average power structure model in Japan.

■ Toyota LCA History



■ Environmental Data for FY2001 Japanese New Models and Redesigns (Passenger Cars)

Specifications	Name	Soarer	WiLL Vs	Ipsum	Spacio	Brevis	Estima HV	Altezza Gita
	Vehicle model	UA-UZZ40	TA-ZZE127	TA-ACM21W	TA-NZE121N	TA-JCG10	ZA-AHR10W	TA-GXE10W
	Engine	3UZ-FE	1ZZ-FE	2AZ-FE	1NZ-FE	1JZ-FSE	2AZ-FXE	1G-FE
	Transmission	5AT	4AT	4AT	4AT	5AT	CVT	4AT
Start of sales		April 2001	April 2001	May 2001	May 2001	June 2001	June 2001	July 2001
Ozone depleting material	CFC 12 [air conditioning refrigerant]	Not used	Not used	Not used	Not used	Not used	Not used	Not used
Greenhouse gases	Amount of HFC134a as air conditioning refrigerant (g)	700	530	800	530	600	800	600
	CO_2 (g/km) [10-15 Japanese test cycle]	277	157	197	147	203	131	207
Fuel efficiency (km/L)	10-15 Japanese test cycle (Figure reviewed by Ministry of Land, Infrastructure and Transport)	8.5	15.0	12.0	16.0	11.6	18.0	11.4
External vehicle noise (acceleration noise) (dB-A)	Adapted regulation figures	76	76	76	76	76	76	76
	Other figures	75	75	75	75	75	73	75
Exhaust emissions[1]	Transitional low-emissions level	・・・	○	○	○	○	・・・	○
	Low-emissions level	・・・	・・・	・・・	・・・	・・・	・・・	・・・
	Ultra low-emissions level	○	・・・	・・・	・・・	・・・	○	・・・
Substances of environmental concern used in parts	Lead (compared to the 1996 figure)	Used (1/3 or less)	Used (1/3 or less)	Used (1/3 or less)	Used (1/3 or less)	Used (1/3 or less)	Used (1/3 or less)	Used (1/3 or less)
	Mercury (discharge tubes for lightings)	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount
	Cadmium (electronic control parts)	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount
	Sodium Azide	Not used	Not used	Not used	Not used	Not used	Not used	Not used
Recycling[2]	Parts using easy-to-recycle materials (TSOP)	Bumpers and interior/exterior parts	Bumpers and interior parts	Bumpers and interior parts	Bumpers and interior parts	Bumpers and interior/exterior parts	Bumpers and interior parts	Bumpers and interior parts
	Natural material	Door trim and quarter trim lower base material	・・・	・・・	・・・	Door trim and package tray base material	・・・	・・・
	Using recycled PP	○	○	○	○	○	○	○
	Sound-proofing materials made of recycled shredder residue (RSPP)	・・・	・・・	・・・	・・・	○	・・・	・・・

Specifications	Name	Verossa	Crown mild hybrid	Windom	Camry	Noah/Voxy	Premio/Allion	Mark II Blit
	Vehicle model	TA-JZX110	YA-JKS175	TA-MCV30	UA-ACV30	TA-AZR60G	UA-ZZT240	TA-JZX110W
	Engine	1JZ-FSE	2JZ-FSE	1MZ-FE	2AZ-FE	1AZ-FSE	1ZZ-FE	1JZ-FSE
	Transmission	5AT	5AT	5AT	4AT	4AT	4AT	5AT
Start of sales		July 2001	August 2001	August 2001	September 2001	November 2001	December 2001	January 2002
Ozone depleting material	CFC 12 [air conditioning refrigerant]	Not used	Not used	Not used	Not used	Not used	Not used	Not used
Greenhouse gases	Amount of HFC134a as air conditioning refrigerant (g)	550	600 (750)[3]	580	580	850	520	550
	CO_2 (g/km) [10-15 Japanese test cycle]	190	181	241	214	166	147	207
Fuel efficiency (km/L)	10-15 Japanese test cycle (Figure reviewed by Ministry of Land, Infrastructure and Transport)	12.4	13.0	9.8	11.0	14.2	16.0	11.4
External vehicle noise (acceleration noise) (dB-A)	Adapted regulation figures	76	76	76	76	76	76	76
	Other figures	75	75	75	74	74	73	75
Exhaust emissions[1]	Transitional low-emissions level	○	・・・	○	・・・	○	・・・	○
	Low-emissions level	・・・	○	・・・	・・・	・・・	・・・	・・・
	Ultra low-emissions level	・・・	・・・	・・・	○	・・・	○	・・・
Substances of environmental concern used in parts	Lead (compared to the 1996 figure)	Used (1/3 or less)	Used (1/3 or less)	Used (1/3 or less)	Used (1/3 or less)	Used (1/3 or less)	Used (1/3 or less)	Used (1/3 or less)
	Mercury (discharge tubes for lightings)	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount
	Cadmium (electronic control parts)	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount	Extremely small amount
	Sodium Azide	Not used	Not used	Not used	Not used	Not used	Not used	Not used
Recycling[2]	Parts using easy-to-recycle materials (TSOP)	Bumpers and interior parts	Bumpers and interior/exterior parts	Bumpers and interior/exterior parts	Bumpers and interior parts	Bumpers	Bumpers and interior parts	Bumpers and interior parts
	Natural material	・・・	・・・	Package tray trim base material	Package tray base material	・・・	Package tray trim base material	・・・
	Using recycled PP	・・・	○	・・・	○	○	○	○
	Sound-proofing materials made of recycled shredder residue (RSPP)	・・・	○	・・・	・・・	・・・	・・・	・・・

*Basically, the data above relates to the best-selling grade

1. Level of emission gases from passenger cars — refer to the table on the right
2. See pp. 34 - 37 for details
3. The figures in parentheses are applicable only to vehicles with rear air conditioners

Level of emission gases from passenger cars

(10-15 Japanese test cycle)	2000 regulation	Transitional low-emissions level	Low-emissions level	Ultra low-emissions level
Carbon Monoxide (g/km)	0.67	0.67	0.67	0.67
Hydrocarbon (g/km)	0.08	0.06	0.04	0.02
Nitrogen Oxide (g/km)	0.08	0.06	0.04	0.02

*Environmental data for new models and those that undergo complete redesign is available in product catalogs as “Environmental Specifications”

Environmental Performance of New Vehicles

New Premio and Allion

Meeting both the 2010 Fuel Efficiency Standards and the Ultra Low-Emission Level (75% reduction)

The New Premio and Allion Meet Government Fleet Standards Based on the Law on Promoting Green Purchasing

Toyota developed the new Premio and Allion keeping in mind high quality and advanced functions as the key parameters, with the goal of achieving superiority in package, design, and performance. Toyota naturally pursued superiority in environmental performance suitable to sedans of the 21st century.

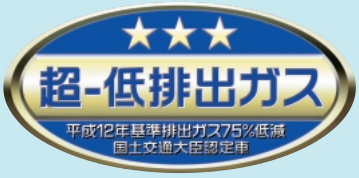
As the first step, Toyota achieved excellence in both fuel efficiency and low exhaust emissions. All models qualified for the Green Taxation System, and the 1.8- and 1.5-liter models also qualified as Ultra Low-Emission Vehicles. They also met the government fleet standards based on the Law on Promoting Green Purchasing.

■ Green Tax System Applicable to the Premio and Allion

Vehicle class	1.5L/1.8L	2.0L
Levels achieved	2010 Fuel Efficiency Standards + Ultra Low-Emission Level[1]	2010 Fuel Efficiency Standards + Transitional Low-Emission Level[2]
Automobile acquisition tax	Reduced by 15,000 yen	Reduced by 15,000 yen
Automobile tax	Reduced by 50%	Reduced by 13%
Number of vehicles sold in FY2001[3]	30,818 (87%)	4,780 (13%)

1. 75% reduction from 2000 Exhaust Emissions Standard
2. 25% reduction from 2000 Exhaust Emissions Standard
3. December 2001 - March 2002

*The figures inside parentheses ( ) indicate ratios relative to the total number of vehicles sold, excluding some Welcab vehicles (specially equipped vehicles)



"Ultra-Low Emissions Vehicle" certification sticker

To improve fuel efficiency, Toyota installed a newly developed, small, lightweight engine, the VVT-i, as well as a high-efficiency transmission, and also took measures to reduce air resistance, body weight, and the power needed for the air conditioner. The 2.0-liter model equipped with a direct-injection engine and CVT also achieved the highest fuel efficiency in its class.

Shigeyuki Hori, Chief Engineer of the Vehicle Development Center 2, who was responsible for coordinating the development of the Premio and Allion

Environmentally Conscious Design that Takes Recycling of Resources into Consideration

Toyota uses a resin with superior recoverability for the bumpers and pillar garnish. For the dash silencers and roof molding, Toyota uses materials that are easier to recycle than PVC, thereby reducing the volume of PVC by more than one half compared to conventional vehicles. Also, for the luggage compartment side-trim, Toyota uses a material recycled from bumpers collected from dealers, and for the floor silencer, recycled chip urethane. For the package tray trim, Toyota uses kenaf, a natural material. With regard to substances of environmental concern, Toyota reduced the usage of lead, thereby achieving the automobile industry's voluntary target of "reducing lead usage to 1/3 or less of the 1996 level by the end of 2005" ahead of schedule.

To reduce the volume of substances released into the atmosphere, Toyota carried out prior assessment based on LCA. The results confirmed that CO_2, NOx, SOx, and NMHC (Non-Methane Hydro Carbons) emission levels were lower than conventional vehicles over the total product life.

See p. 19 for details on LCA

Translating Environmental Concern into Tangibles

Chief Engineer Shigeyuki Hori recalls that the development involved continuous efforts to steadily reduce environmental impact through measures to improve fuel efficiency even when the air conditioning was in use, and selecting materials that would reduce waste without altering performance. "It was important for the development team to think about the environment in relation to their daily lives. The habits and attitudes of the development team members were manifested in the environmental performance of the cars, leading to the birth of the Premio and Allion. There are no limits in technical advances. We want to continue designing even better cars while maintaining a high level of awareness about the environment," says Chief Engineer Hori.

?! What is the Green Taxation System?

This is a preferential tax treatment based on the "Incentive for Introduction of Fuel-efficient Vehicles and Low-pollution Vehicles" which went into effect in April 2001. Purchasers of cars that meet both the 2010 Fuel Efficiency Standards and the Ministry of Land, Infrastructure and Transport's "Approval System for Low-Emission Vehicles" are entitled to reduced Automobile Acquisition Tax and Automobile Tax.

What is the Law on Promoting Green Purchasing?

Public organizations, such as the national government, have made decisions to actively purchase "green" products in order to promote a wider use of environmentally conscious products. These actions are summarized in the "Law Concerning the Promotion of Procurement of Eco-friendly Goods and Services by the State and Other Entities," i.e., the "Law on Promoting Green Purchasing."

Procurement/Production/Logistics

Kosuke Shiramizu
Executive Vice President and
Production Environment Committee Chairman

Kosuke Shiramizu joined Toyota in 1963 and has gained experience in a wide range of technology and production areas since. He became a member of the board of directors in 1992, and conducted activities for establishing and improving the Environmental Management System, such as ISO 14001, as a Director responsible for environmental issues in the production field. He became a Senior Managing Director in June 1999, also taking charge of Environmental Issues as Chairman of the Production Environment Committee. He was appointed Executive Vice President in 2001.

Toyota achieved its FY2001 goals in each area by taking action based on the Third Toyota Environmental Action Plan. The results of the major initiatives taken by Toyota in FY2001 are as below.

Procurement: Steady increase in the number of suppliers acquiring ISO 14001 certification (up by 73 companies for a total of 369) and 100% achievement of green purchasing.

Production: Enhancements to internal audits through a reevaluation of audit items, implementation of an Environmental Management System (EMS) in the Production Engineering Group, reduction in CO_2 emissions through line consolidation and energy loss reduction (down by 4%, for a reduction of 70,000 tons from the previous year), the challenge to achieve "zero combustible waste," development of a resource conservation scenario, and reduction of VOC emissions (an average of 48g/m^2 for all lines).

Logistics: Reduction in CO_2 emissions through enhanced transport efficiency, and reduction in packaging and wrapping materials through the use of returnable containers.

■ **Organization Chart** (As of March 2002)

Production Environment Committee
Chairman:
Executive Vice President Kosuke Shiramizu
Established in 1963
Discusses and determines important issues such as company environmental preservation measures and policies, and promotes comprehensive environmental protection measures

- **Production Environment Technology Subcommittee**
  Conducts technological development focusing on environmental measures at the pollution source of production equipment and plans measures for equipment
- **Overseas Production Environmental Subcommittee**
  Promotes transfer of environmental preservation technology to overseas businesses
- **Plant Production Environmental Subcommittee**
  Conducts environmental preservation at each domestic plant and housing works
  Environmental Manager by Region (Plant General Manager)
  Environmental Preservation Secretariat by Plant
- **Production Environment Logistics Subcommittee**
  Promotes reductions in environmental impact caused by logistics

Procurement

Environmental Initiatives in Cooperation with Suppliers

Progress of Environmental Purchasing Guidelines

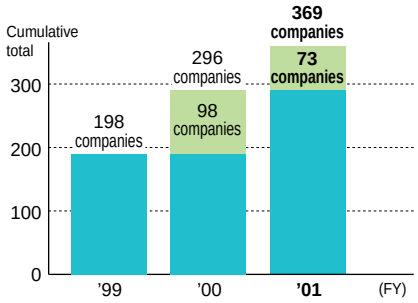
In 1999, Toyota presented its "Environmental Purchasing Guidelines" (hereafter referred to as "Purchasing Guidelines") to all of its suppliers of automobile parts and materials, asking them to promote the following environmental actions.

(1) Voluntary acquisition of ISO 14001 certification
(2) Management of substances of environmental concern and provision of related data to Toyota

In FY2001, of the 473 suppliers, a cumulative total of 369 companies achieved ISO 14001 certification. Of those companies that have not yet been certified, 91 companies are expected to acquire certification by the end of 2003.

As for substances of environmental concern, Toyota obtains the relevant data for new parts and materials when they are introduced.

■ **Trend in ISO 14001 Certification of Suppliers**



*Certification was suggested to approximately 450 suppliers in March 1999

Environmental Risk Reduction

As part of its efforts to manage and reduce substances of environmental concern, Toyota took the following actions with respect to all of its 320 suppliers of automobile parts:

(1) Held meetings to explain the operation of Toyota's environmental data collection system.
(2) Explained the importance of reducing hexavalent chromium, presented Toyota's reduction targets, and requested the implementation of other specific steps.

Achievement of 100% Green Purchasing

In March 2002, Toyota achieved 100% green purchasing* for office supplies and office equipment, reaching the goal that had been set in the Third Toyota Environmental Action Plan two years ahead of schedule. Toyota developed internal criteria for green purchasing and requested the cooperation of various related departments and suppliers. In FY2001, approximately 1,400 office supply items and approximately 300 units of office equipment, including personal computers, printers, copiers, and fax machines were switched to green products.

As an example of a switch to a green product, Toyota is using mouse pads made from the remnant materials of a production process (molding of roof materials) at its own plants.

Mouse pads

*Green purchasing:
Toyota classifies the buying of items directly related to production as "procurement" and the buying of office-related products and equipment as "purchasing"

■ **How to Recognize Green Products**

(1) Products with environmental labels
Eco mark, Green mark,
R-mark (mark indicating use of recycled paper)

(2) Products that comply with the Law on Promoting Green Purchasing

(3) Products listed in Environmental Data Books of Green Purchasing Network (GPN)

Production

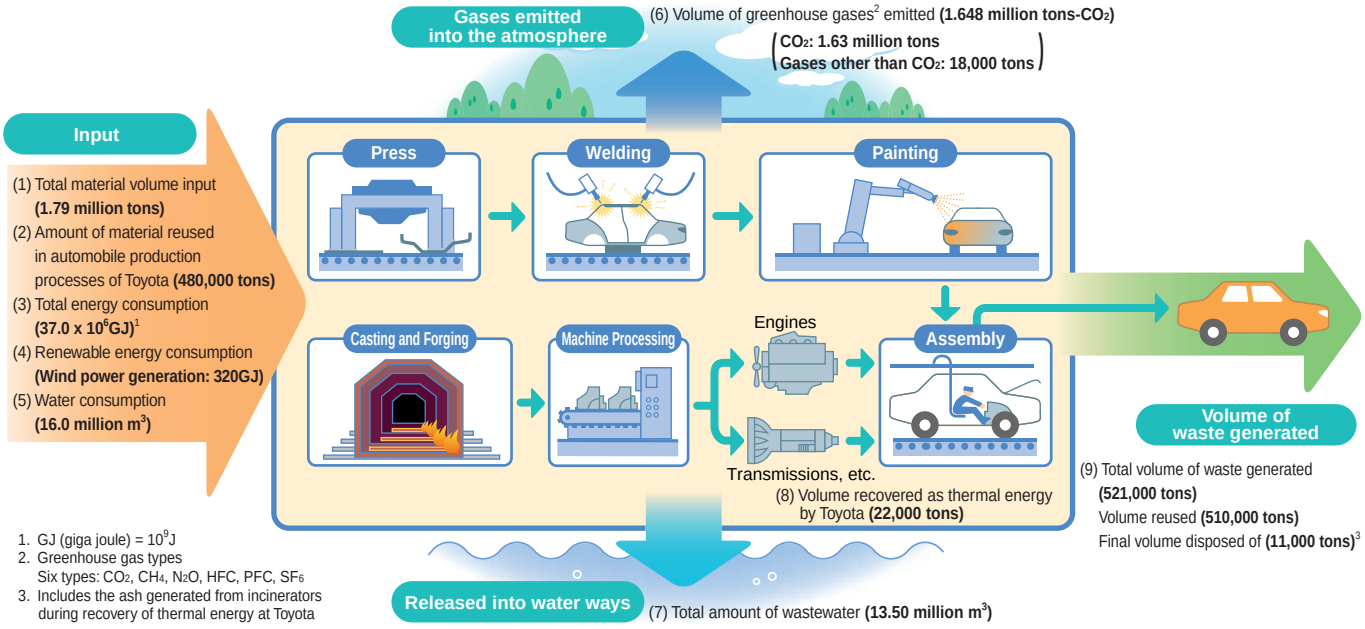
Volume of Resources Input and Volume of Substances Released into the Environment

In order to create a recycle-oriented society, it is absolutely important to efficiently utilize resources and to reduce the volume of substances of environmental concern released. The figure below shows the total volume of resources used during automobile manufacturing (input) at Toyota in FY2001 and the total volume of substances of environmental concern released (output).

In FY2001, a total of 1.79 million tons of raw materials and supplementary materials, 37.0 x 10^6GJ of energy in the form of electricity and fuel etc., and 16.0 million m^3 of water for industrial purposes, were input into production processes and used for automobile manufacturing at Toyota.

1.648 million tons-CO_2 of greenhouse gases and 13.50 million m^3 of water were released into the atmosphere and waterways respectively. Of the total waste volume, 22,000 tons were recovered as thermal energy by Toyota and 510,000 tons were reused as raw material for cement.

■ **Volume of Resources Input and Volume of Substances Released into the Environment in FY2001**



1. GJ (giga joule) = 10^9J
2. Greenhouse gas types
   Six types: CO_2, CH_4, N_2O, HFC, PFC, SF_6
3. Includes the ash generated from incinerators during recovery of thermal energy at Toyota

Production Environmental Management System

FY2001 Goals

- Steadily promote the achievement of environmental goals set for each plant
- Implement internal audits using a new auditing method at eight plants and housing works
- Implement an internal audit of EMS in the Production Engineering Group, and expansion of EMS to overseas projects

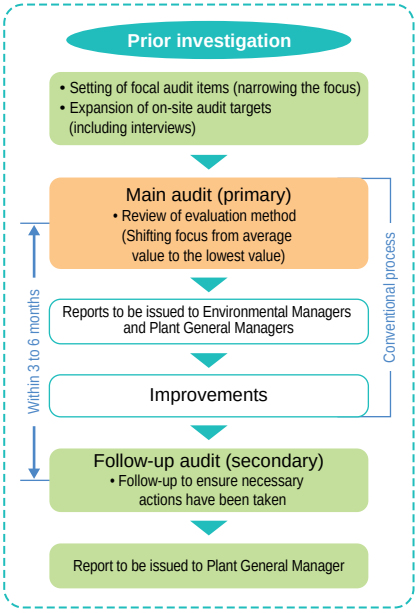
Improving the Internal Audit System

In order to increase the effectiveness of internal audits Toyota made improvements to its internal auditing method in FY2001, and applied the new method to eight plants and housing works. The new audit method consists of a main audit and a follow-up audit; the areas identified as requiring improvement or correction by the main audit are checked by the follow-up audit, ensuring that continuous improvements are being made.

The issues identified by the audit included insufficient sorting of waste at resource stations and inadequate control items to prevent soil and groundwater contamination, and others. All of these were set as new audit-focus items and a follow-up audit confirmed that these issues had been corrected completely.

On-site inspection of an underground tank during an audit

■ **Improvements to the Internal Audit System**



Addition Change

Internal Audit of EMS in the Production Engineering Group

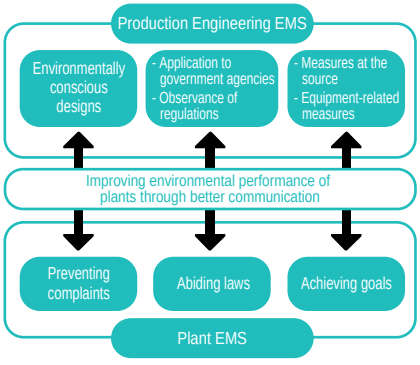
Construction and application of EMS in the Production Engineering Group began in FY2000 in order to quantitatively assess the environmental impact of production equipment and make improvements before introduction into a plant, thereby reducing the environmental impact of the plant.

In FY2001, Toyota conducted internal audits on the operation status in 10 departments where construction of EMS was complete.

As with internal audits of plants, Toyota conducted follow-up audits six months later to check on the status of corrective action implementation, and confirmed that excellent improvements were being made.

Overseas, just as it had done at its facilities in Japan, Toyota incorporated environmentally conscious designs into production equipment when installing new production lines at Toyota Motor Manufacturing, Alabama, Inc. (TMMAL), in the U.S. and Toyota Motor Manufacturing Canada, Inc. (TMMC), in Canada, and conducted audits.

■ **Purpose of Introducing EMS into Areas of Production Engineering**



■ **Major Improvements**

Evaluation items	Improvement details
Environmental impact evaluation	Improving accuracy by shifting from qualitative evaluation to quantitative evaluation
Communication	Feedback of information on environment-related measures implemented at plants to the design database for new designs
Technical information	Enhancing the collection of case examples on the latest technologies related to energy and resource conservation
Performance management	Comparing actual values to planned values for each project and feedback of the results

Audits at Waste Processing Companies

Since 1996, as part of EMS, Toyota has been conducting annual audits of 80 intermediate waste processing companies. These audits verify the existence of clear documentation of waste processing procedures, and check on the status of facility management, as well as the storage and processing of waste materials received, etc.

In FY2001, in addition to auditing items for intermediate waste processing, Toyota checked all other control items leading to final disposal, and verified that proper final disposal was taking place.

In addition to the above measures, beginning in FY2002, Toyota is planning to expand the scope of its audits to include 79 transportation companies. As a preparatory step to these audits, in FY2001 Toyota conducted trial audits at three transportation companies.

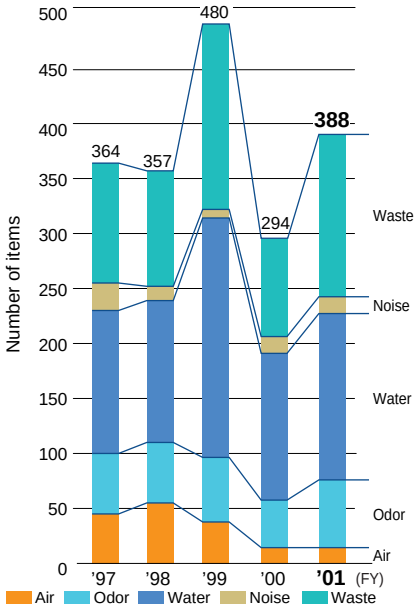
Initiatives to Reduce Environmental Risk

Results of the Prior Assessment System for Environmental Preservation

When introducing new raw materials or supplementary materials, or when expanding its plants, Toyota implements a prior assessment of the environmental impact, including air and water quality, offensive odors, noise, vibration, waste and chemical substances, based on its Prior Assessment System for Environmental Preservation.

In FY2001, the number of items on which prior assessments were conducted increased as a result of assessments done to determine the feasibility of new raw materials associated with the development of hybrid vehicles, and others.

■ **Items Evaluated by the Prior Assessment System for Environmental Preservation**



Reinforcement of Control on Chemical Substances

3,420 Substances Subject to Control

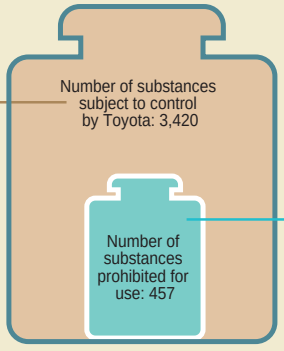
In order to reduce the volume of chemical substances used, in response to societal demands, and to implement appropriate measures towards regulations in various countries in conjunction with consolidated environmental management, in 2000, Toyota increased the number of substances subject to control under its prior assessment system from 2,232 to 3,420 and expanded the number of substances prohibited for use from 149 to 457.

In 2001, Toyota conducted a survey of the usage status of these additional substances and created a database from the results.

Laws and regulations used as the basis for selecting the substances subject to control

- Law concerning Examination and Regulation of Manufacture, etc. of Chemical Substances
- Water Pollution Prevention Law
- Air Pollution Control Law
- Clean Water Act
- Clean Air Act
- PRTR Law: Specified chemical substances (Class 1 and 2)
- Endocrine disrupting substances (Ministry of the Environment, etc.)
- TRI/NPRI reporting system in North America and EPER in Europe Specified chemical substances
- European Product Control Regulations
- Substances voluntarily controlled by the German Association of the Automotive Industry (VDA)

Number of substances subject to control and prohibited substances



Laws and regulations used as the basis for selecting the substances prohibited for use

- Law concerning Examination and Regulation of Manufacture, etc. of Chemical Substances (Classes 1 and 2 specified chemical substances)
- Water Pollution Prevention Law (Organo-chloric substances and agricultural chemicals subject to environmental standards, wasterwater standards, and monitoring)
- Air Pollution Control Law (Specified substances)
- Law Concerning the Protection of the Ozone Layer
- OECD Risk-reduction program (Bromine-based flame retardants)

Inspections by Environmental Managers (Plant General Managers)

As in previous years, in tandem with the Global Environment Month in June, Toyota had its Plant General Managers conduct on-site inspections of all plants and housing works, concentrating on the prevention of soil and groundwater contamination and the thorough sorting of waste. These inspections are intended to provide managers with opportunities to confirm on-site conditions firsthand (*genchi genbutsu*) and to enable them to identify issues, promote countermeasures, and increase the thoroughness of day-to-day control.

Plant General Manager inspecting an underground press pit at Takaoka Plant

Storing PCB

In accordance with the Law Concerning Special Measures Against PCB (polychlorinated biphenyl) enacted in July 2001, Toyota again reported to the government on its storage of 4,633 transformers and condensers that contain polychlorinated biphenyl in the form of an insulating oil.

Toyota is safely storing these transformers in accordance with the standard specified by law to prevent leakage, soil contamination, or the escape of evaporated gas.

End-of-life transformers in storage

Soil and Groundwater-related Measures

In FY2001, Toyota completed the soil remediation measures that it had been carrying out at all six plants - the Honsha, Motomachi, Kamigo, Takaoka, Miyoshi and Tsutsumi plants. Measurements taken indicated that the levels of trichloroethylene, 1,1,1-trichloroethane, and dichloromethane were all below environmental standards.

In terms of groundwater contamination prevention, Toyota had in 1997 completed an effluent-prevention measure, which involved the digging of barrier-type wells and pumping and remediating groundwater. Toyota has continued groundwater remediation using pump and treat technology, and regularly monitors measurements. Toyota reported these measurement results along with the remediation status to the government, as well as to community councils in the surrounding communities.

■ **Trichloroethylene Measurement Values in FY2001**

Environmental standard: 0.03 Unit: mg/L

Plant	Level	
	Soil	Ground water
Honsha	less than 0.002 - 0.024	less than 0.002 - 1.70
Motomachi	less than 0.002 - 0.023	less than 0.002 - 1.52
Kamigo	less than 0.002 - 0.007	less than 0.002 - 1.17
Takaoka	less than 0.002 - 0.029	less than 0.002 - 2.36
Miyoshi	less than 0.002 - 0.016	less than 0.002 - 0.587
Tsutsumi	less than 0.002 - 0.014	less than 0.002 - 1.12

*Measurements are taken at all plants and housing business sites
*Has not been detected in plants other than those listed
(At the three housing business sites, measurements began in 1997)
*The level has a range since each plant includes multiple measurement points

Voluntary Information Disclosure to Surrounding Communities

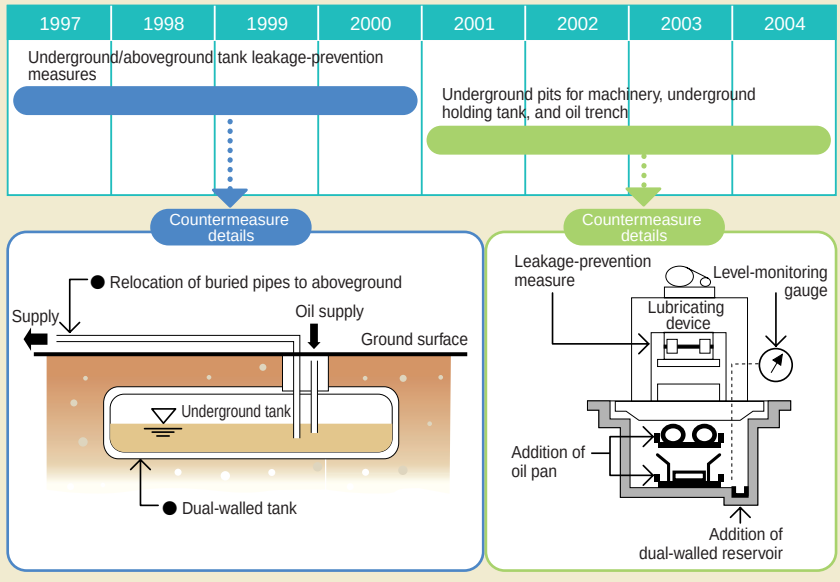
In FY2001, as in FY2000, Toyota held community councils to voluntarily disclose information to people in the communities surrounding all of its plants and housing works. At these community councils, Toyota explained its framework for managing chemical substances, disclosed substance release data, and reported on environmental conditions, including air, water, soil, noise, vibration, offensive odors, actions taken by the plants, and the complaint status.

Responses from the people who attended these community councils included comments such as "On-site explanation gave me a better understanding of the situation," "I now know what Toyota is doing to reduce the usage of chemical substances such as toluene," and "I hope Toyota will continue to hold these community councils."

A community council held by Tahara Plant

Measures to Prevent Soil and Groundwater Contamination

In order to avoid environmental risks from soil contamination, Toyota has, since 1997, been taking measures to prevent leakage from underground tanks (relocating pipes above ground, using dual-walled tanks, etc.). As the second phase of these activities, in 2001 Toyota began implementing measures designed to prevent leakage from machinery and facilities installed in concrete pits.



Prevention of Global Warming

FY2001 Goal

Reduce total CO_2 emissions volume to 1.7 million tons or less by implementing measures based on the scenario for CO_2 reduction by 2005

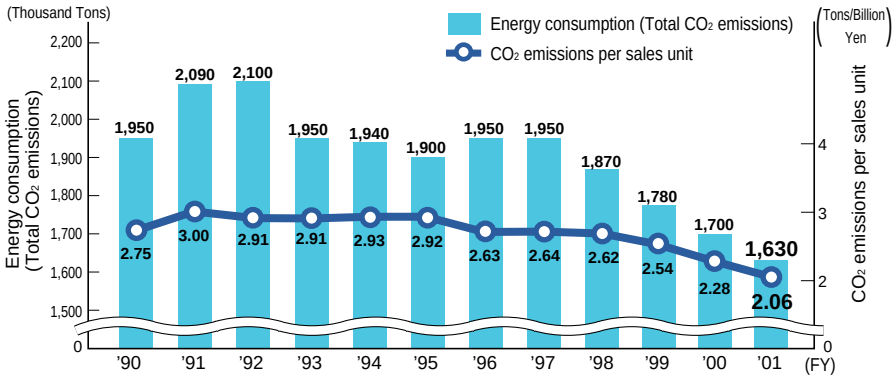
Reducing Energy Loss

Toyota promoted CO_2 reduction measures according to the scenario for reduction created in FY2000.

As a result, the total CO_2 emissions volume was 1.63 million tons, down 4% from the previous year, while CO_2 emissions per sales unit also went down by 10%, achieving Toyota's goals.

Key measures taken by Toyota included consolidation of production lines, introduction of a flexible operation system, thorough implementation of energy-saving measures in new lines, and introduction of cogeneration systems. In addition to these measures, in FY2001, Toyota encouraged each of its plants to reduce CO_2 emissions by setting up a reduction target for power consumption during non-operation at each plant.

■ **Energy Consumption at Toyota's Automobile Production Process and CO_2 Emissions per Sales Unit**



Electricity	0.3817 kg-CO_2/kWh	Butane gas	3.0094 kg-CO_2/kg
A-type heavy oil	2.7000 kg-CO_2/L	City gas	2.3576 kg-CO_2/m^3
C-type heavy oil	2.9419 kg-CO_2/L	Coke	3.2502 kg-CO_2/kg
Kerosene	2.5308 kg-CO_2/L	Coal	2.3536 kg-CO_2/kg

Stopping Equipment when not in Operation

Toyota took measures aimed at reducing power consumption during non-operation of the lines. For the painting process, Toyota examined the actual active and inactive periods for painting booths at all plants, and standardized them, while for the body lines, Toyota reduced waste in power consumption by starting and stopping the entire line at the same time, instead of each piece of equipment being started and stopped at different times.

Introduction of Cogeneration Systems

Toyota has been systematically introducing cogeneration systems, which offer higher energy conversion efficiency. In FY2001, a system with a generation capacity of 7,150kW was introduced into the Takaoka Plant, reducing CO_2 emissions by 1,300 tons per year.

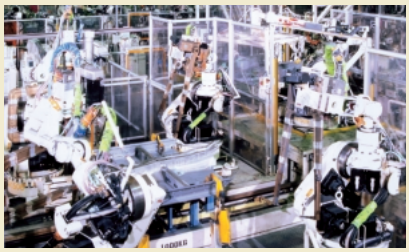
New Energy-saving Lines

Reduction of CO2 Emissions by about 50%

By the end of FY2001, Toyota had introduced the "Global New Body Line" (hereafter referred to as the New Line) into 33 out of 34 body lines in Japan and overseas. The New Line significantly reduces power consumption through streamlining of equipment and increased use of natural light, requiring fewer lighting fixtures. Both CO_2 emissions and installation space requirements have also been reduced by about 50%.

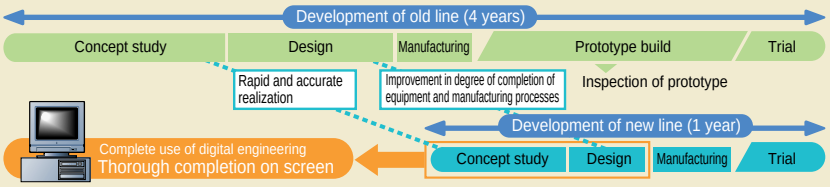
In developing its New Line, Toyota reduced environmental impact by creating a digital design that enables 3D simulation without prototyping, and by reducing the number of auxiliary tools (jigs) used for increasing processing accuracy and operation efficiency. The New Line was introduced at Toyota Motor Vietnam (TMV) in 1996, the Prius line in 1997, and the Vitz line at the Takaoka Plant in 1998, and test runs were completed at each plant. From then on, Toyota expanded the introduction of the New Line to other body lines in conjunction with vehicle redesigns.

Toyota also gradually introduced next-generation production lines into lines other than body lines, thereby promoting the reduction of CO_2 emissions through energy conservation.

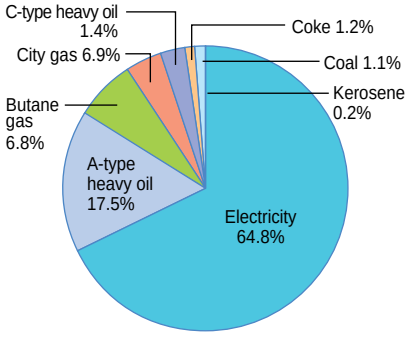


Global New Body Line

■ **Development Fast-tracked by Digital Engineering**



■ **Component Ratio of Energy Used during Automobile Production Processes**



Purchase of Green Power

Since December 2001, Toyota has been supplied with wind-generated power, and by the end of the fiscal year had purchased 500,000kWh of electricity.

To cooperate in green power generation activities, which aim to reduce CO_2 emissions by using natural energy sources, in 2000 Toyota concluded a Green Power Certification System agreement with Japan Natural Energy Company Limited. Based on this subcontracting agreement Toyota will use 2 million kWh of wind-generated power per year.

Reducing Substances of Environmental Concern

FY2001 Goals

Reduce discharge volumes of paint solvents aiming to achieve world top levels

- Reduce discharge volumes of toluene and xylene (substances subject to PRTR) to 4,000 tons or less
- Body painting process: Reduce VOC emissions to an average of 51g/m^2 or less for all lines
- Plastic paint coating: Develop a scenario for reduction of VOC emissions

Reducing the Volume of Substances Subject to PRTR

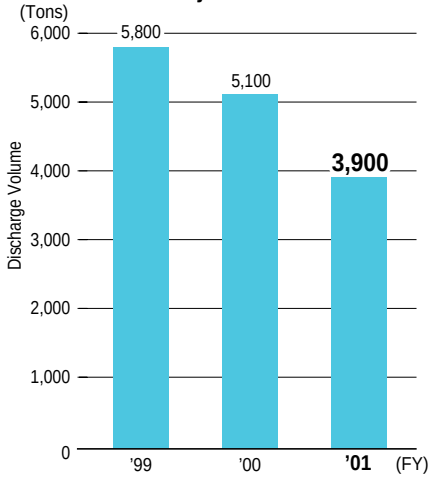
Toyota currently uses a total of 20,800 tons of 26 substances that are subject to PRTR.* Meanwhile, toluene and xylene, which are used as paint solvents in painting processes, account for approximately 79% of the total volume discharged.

Since 1998, Toyota has been switching to the use of solvents that are not subject to PRTR and are less hazardous. It continued this effort throughout FY2001 according to plan, reducing the discharged volume of toluene and xylene to 3,100 tons and thereby achieving its goal.

Some of the cutting oils used in machining processes used to contain substances subject to PRTR. However, Toyota switched to cutting oils not containing substances subject to PRTR at all of its plants.

*PRTR:
Pollutant Release and Transfer Register

■ **Trend in Discharge Volumes of Substances Subject to PRTR**



*Discharge volume:
The total volume discharge into the atmosphere and public waterways, as well as that disposed of as landfills at business sites

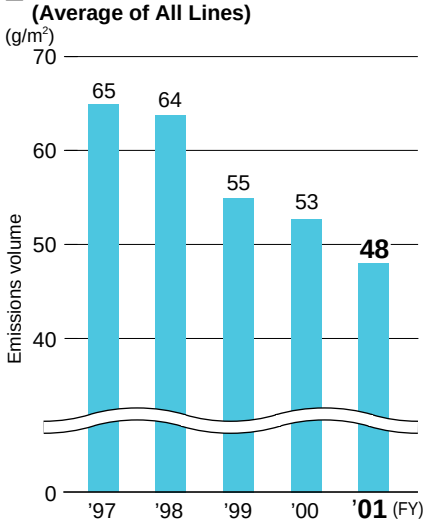
Reducing VOC Emissions

Average VOC emissions on all body painting lines was reduced to 48g/m^2. Especially at the Takaoka Plant, which serves as a model plant, Toyota reduced VOC emissions to 30g/m^2.

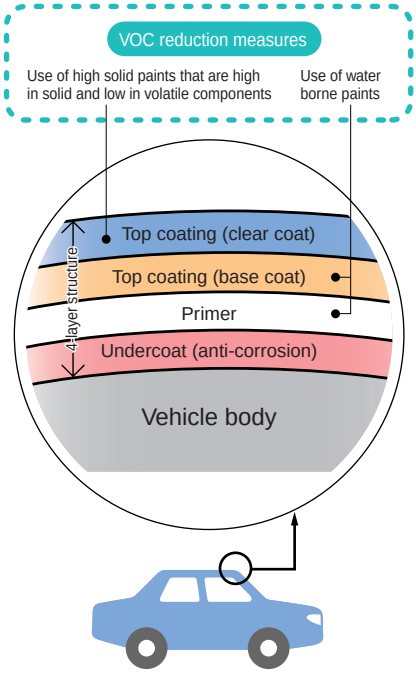
These improvements were achieved mainly through the following measures: expanded use of water borne base coat paints, use of high solid clear paints containing a low percentage of VOC, reducing the usage of purge solvents and improving their recovery rates.

Toyota also developed a company-wide scenario for the plastic paint on bumpers and moldings. Based on this, Toyota used the Tahara Plant as its model plant to implement measures for improving the recovery rate of purge solvents, and began taking steps toward achieving these goals.

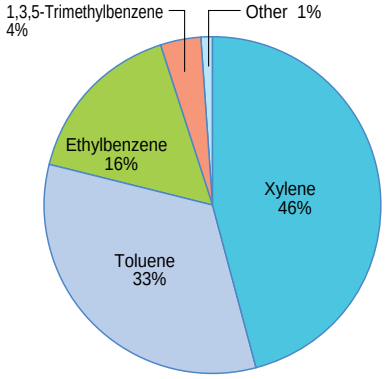
■ **Trend in VOC Emissions Volume (Average of All Lines)**



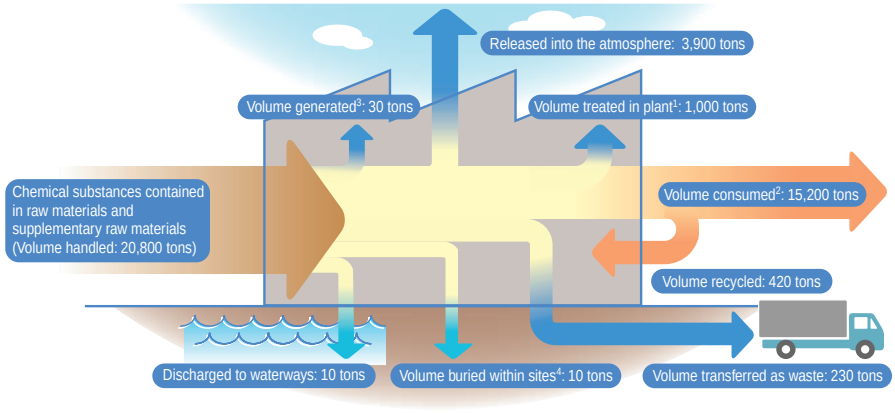
■ **Paint Film Structure and VOC reduction Measures**



■ **Breakdown of Materials Subject to PRTR Discharged**



■ **Total Material Balance of Substances Subject to PRTR**



1. Volume treated in plant: The volume of substances that are incinerated, neutralized, broken down, or changed to other substances in the particular plant
2. Volume consumed: The volume of substances that are changed to other substances through chemical reactions, or are contained in or accompanied with products and transported outside the particular plant
3. Volume generated: The volume of substances that is generated unintentionally
4. Volume buried within sites: The volume of substances disposed of as landfill waste on the particular site

Reducing Waste

FY2001 Goal

Reduce the generation of combustible waste to 27,000 tons or less
(a 56% reduction from 1990)

Toward Zero Emissions

Toyota made steady progress toward achieving its FY2001 goal. As a result, it was able to maintain "zero landfill waste"[1] at all of its plants while reducing the generation of combustible waste to 22,000 tons (down by 65% from the 1990 level), thus achieving its goal. This is a 29% reduction from the previous fiscal year. Toyota also reduced the volume of waste generated[2] by 8% from the previous year, to 79,000 tons.

Major initiatives taken included thorough sorting at each plant to maintain "zero landfill waste," the reduction of wastewater sludge to reduce the generation of combustible waste, and the promotion of recycling through better sorting of paper, etc. For reduction of combustible waste in particular, Toyota set up a model plant and began taking action towards achieving zero generation of combustible waste.

1. Zero landfill waste program:
   A reduction in landfill waste generated directly by plants to less than 5% of the 1995 level

See p. 71 for definition of waste

2. Waste generated:
   The total of all landfill and combustible waste and that recycled for free or for a fee

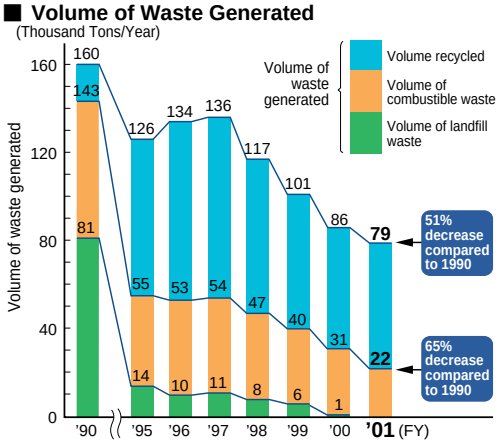
Reducing Sludge Volume during Wastewater Treatment by Concentration of Waste Liquids

In the past, the wastewater and waste liquids generated from production processes were coagulated in a primary processing step, passed through a coagulating sedimentation process at a general wastewater treatment plant, and then incinerated as sludge. Toyota developed a technology for separating wastewater and waste liquids into oil (concentrated solution) and water (condensed solution) in a front-end process, and utilizing the oil as a fuel additive. This technology has reduced the generation of sludge that must be incinerated by 2,800 tons.

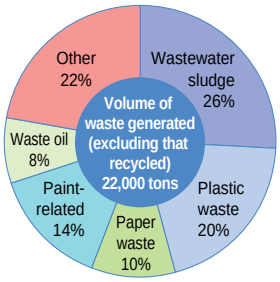
Re-sorting of Waste Paper

Toyota now more carefully sorts waste paper (wrapping paper, envelopes, paper bags, etc.) that used to be incinerated, recovering approximately 1,500 tons per year as recycled paper.

■ Volume of Waste Generated

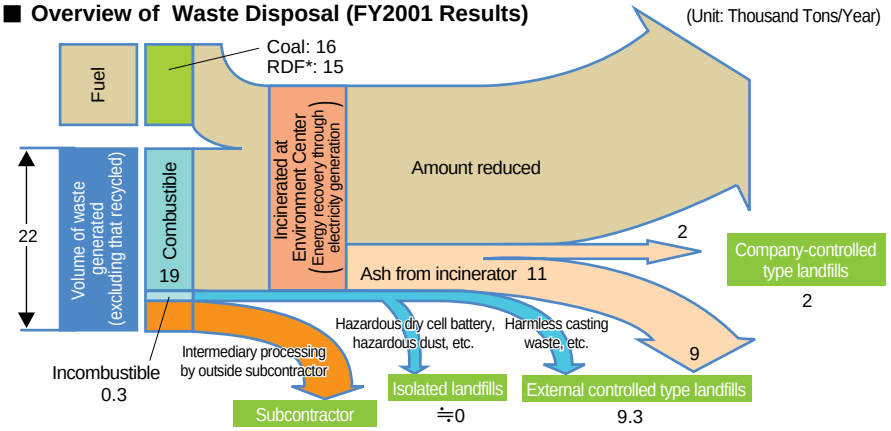


■ Breakdown of the Volume of Waste Generated in FY2001 (Excluding that Recycled)



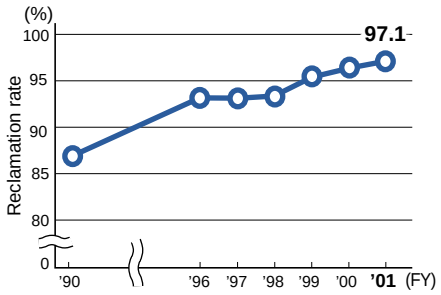
■ Overview of Waste Disposal (FY2001 Results)

(Unit: Thousand Tons/Year)



*RDF (Refuse Derived Fuel):
Solid fuel derived from waste

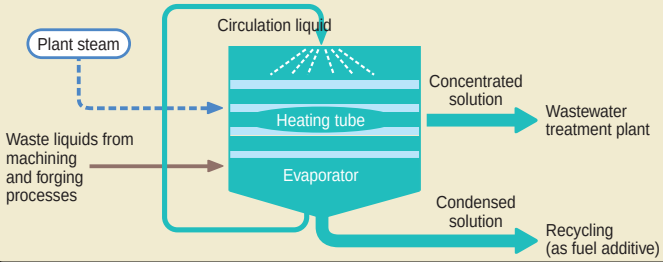
■ Changes in Reclamation Rate

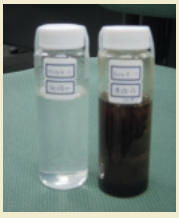


Reclamation rate
$$= \frac{\text{liability recycling + marketable recycling}}{\text{waste + liability recycling + marketable recycling}} \times 100$$

■ Evaporation and Concentration System

Waste liquids are heated using steam, evaporated, and then separated into oil and water. The concentrated oil is recycled.





Right: Oil that has been concentrated using steam (used as fuel additive)
Left: Water separated from oil

Challenge to Achieve Zero Combustible Waste at a Model Plant

Using the Motomachi Plant as its model plant, Toyota is developing technologies for reducing the generation of combustible waste, testing recycling methods, and is taking actions toward achieving "zero combustible waste" by FY2003.

Resource Conservation Actions

FY2001 Goal

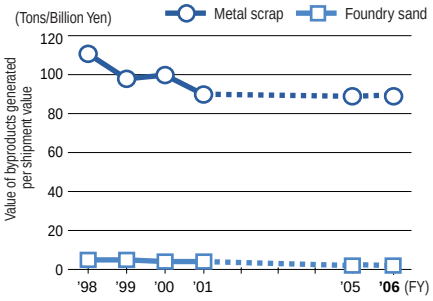
Develop a resource conservation scenario to reduce resource loss

Taking Action at the Source

In response to the implementation of the Law for Promotion of Effective Utilization of Resources and the increasing need for resource conservation measures, Toyota in FY2001 began taking actions to reduce resource usage in all of its automobile manufacturing processes, including casting, forging, pressing and painting.

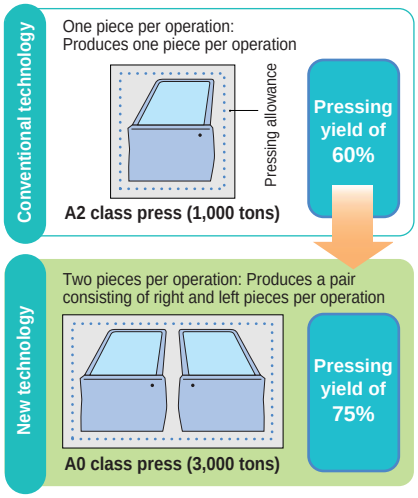
By shifting from the traditional recycling-oriented approach to one that tries to reduce resource usage at the source, Toyota conducted surveys of actual usage of both primary raw materials (steel, aluminum, etc.) and supplementary materials (foundry sand, oils and fats, etc.) and then developed a plan for reductions in the future.

■ **Resource Loss (byproducts) Reduction Plan**



*The figures for FY2006 are those reported by law

■ **Example of Pressing Scrap Reduction**



Conserving Water Resources

FY2001 Goal

Develop a scenario to reduce water consumption in vehicle assembly plants

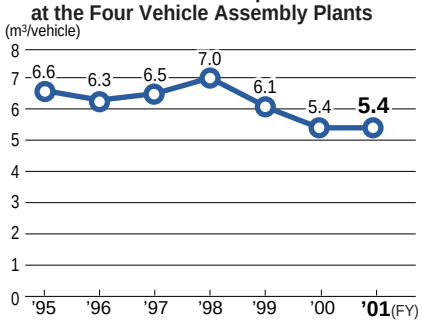
Taking Systematic Steps According to Scenario

With the goal of reducing water consumption per vehicle produced at its vehicle assembly plants by 20% from the FY1995 level by the end of FY2005, Toyota developed a scenario for reduction of water consumption at four plants —the Motomachi, Takaoka, Tsutsumi, and Tahara vehicle assembly plants— and began taking actions.

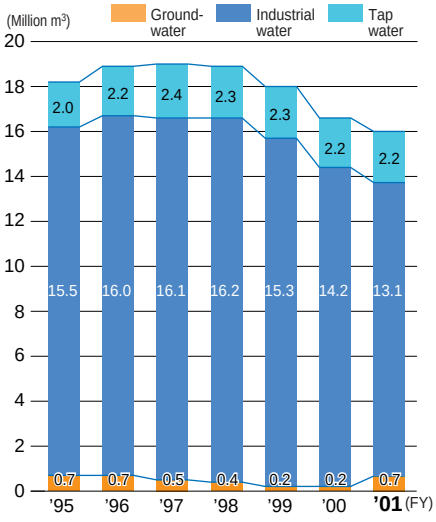
[Key measures]

- Reuse of the water discharged from the anti-corrosion electrodeposition process
- Elimination of the wet sanding process through improvements in paint quality
- Reduction in the cleaning of industrial water filtering equipment
- Recovery of drain water from heating equipment

■ **Trend in Water Consumption Per Vehicle at the Four Vehicle Assembly Plants**



■ **Trend in Total Water Consumption at Vehicle Production Plants**

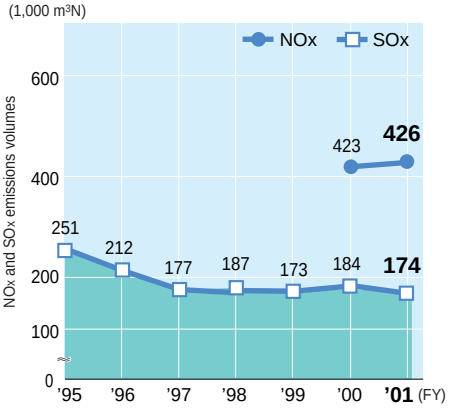


Air and Water Quality Data

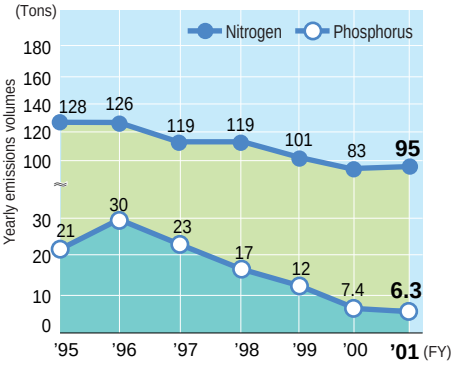
In accordance with the Environmental Reporting Guidelines issued by the Ministry of the Environment in March 2000, Toyota began including data on nitrogen oxide (NOx) emissions.

Nitrogen, phosphorus and COD whose aggregate levels in waterways are regulated, all continue to be at levels that are only 30 to 40% of those allowed by the current regulations.

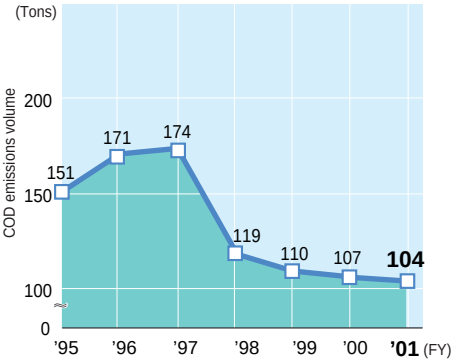
■ **Trends in Volumes of Nitrogen Oxides and Sulfur Oxides Emissions**



■ **Trends in Volumes of Nitrogen and Phosphorus Emissions Included in Wastewater**



■ **Trend in Volume of COD Included in Wastewater**



Honsha Plant

Building a Plant under the “Zero Emissions” Banner

Promoting “Zero Emissions” toward Creating a Green Factory

At the start of FY2000, the Honsha Plant developed a 5-year vision of becoming a “green factory” under the slogan of “Let’s Create a Green Honsha!”

The year 2005 will be the last year of the Third Toyota Environmental Action Plan and the 2005 World Exposition (Exposition of Global Harmony) will also be held that year. Since many visitors from around the world will also come to the area where the Toyota Motor Corporation Head Office is located, employees at the Honsha Plant are determined “to create a plant that befits the hosting location for an environmental expo.”

While visions are being created in the areas of quality, safety, productivity, environment, etc., emphasis is being placed on the environmental measures that the Honsha Plant, which is located in an urban district, is implementing. A new challenge to completely eliminate environmental impact under the banner of “zero emissions” has begun.

Pursuit of the Toyota Production System Contributing to Environmental Responses

The Honsha Plant is the oldest plant of Toyota Motor Corporation and is also where the Toyota Production System (TPS) originated. Thus, Yoshito Kato, Plant General Manager, repeatedly stresses, “If we always stick to the basics and pursue TPS, which considers a simple, slim line the ideal, it will naturally lead to superior environmental responses.”

If no defective pieces are produced, the energy that would be used for producing them will be saved, and no energy would be needed for recycling them. Trying to fix defects at later stages complicates the process, making them prone to producing even more defective products. In contrast, pursuing the strategy of taking measures at the source inevitably simplifies the line.

Yoshito Kato, Plant Manager, checking the status of coolant discharge re-use

The environmental actions being taken at the Honsha Plant, which has one of the largest forging processes in the world, have always been based on the essence of TPS.

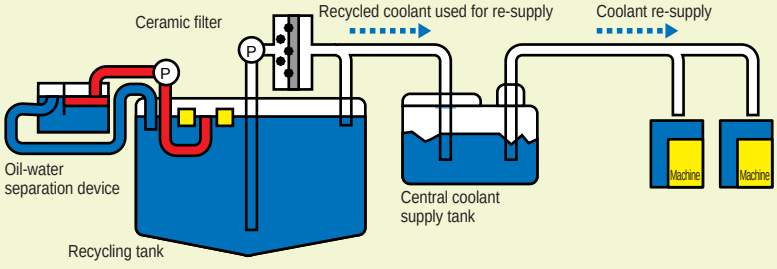
Reusing Coolant

In cooperation with people in the Production Engineering Group, the Honsha plant developed a system for reusing the coolant discharged from machines through filtering and oil-water separation. This system reduced the volume of waste coolant by 240 tons and the total coolant usage as well.

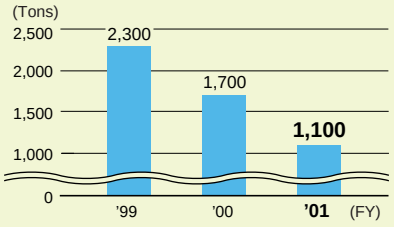
In December 2001, the technology used in this system received the Chairman’s Award at the 6th IMS International Symposium on Environmentally Sustainable Production Systems, sponsored by the Environmental Partnership Organizing Club (EPOC). The Honsha Plant was also the first among all Toyota plants to recycle wastewater sludge into fuel through condensation and evaporation, reducing sludge generation from 560 to 300 tons. The Honsha Plant is also working on developing new technologies, e.g., breaking down highly concentrated wastewater using biotechnology.

See p. 28 for details on condensation and evaporation

■ **Overview of Coolant Recycling System**



■ **Trend in Volume of Waste Generated**



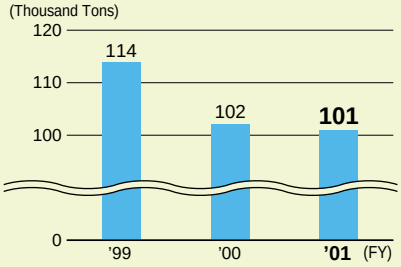
Visualization of Energy Usage at Each Line (*Mieruka*)

In order to clearly identify the areas that need improvement aimed at reducing CO_2 emissions, the Honsha Plant displays energy consumption by line. This has led to reductions in size and streamlining of equipment.

Fuel Conversion for Heat Treatment Ovens

The Honsha Plant began to gradually change the fuel used in its forging systems from heavy oil to city gas, completing the switch-over in FY2001. This reduced CO_2 emissions by 700 tons (35% reduction). Moreover, fuel oil tanks and underground pipes were also removed, thereby simultaneously reducing the risk of soil and groundwater contamination.

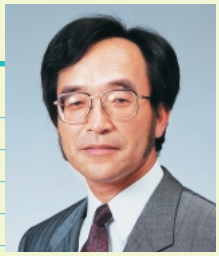
■ **Trend in CO_2 Emissions Volume**



Land Cruiser chassis assembly operations

●Plant Overview●

- Location: 1, Toyota-cho, Toyota City, Aichi Prefecture
- Number of employees: 2,400
- Start of operations: November 1938
- Major products: Land Cruiser, truck and bus chassis units, forging parts
- Site area: 790,000 m^2 ■ Building area: 380,000 m^2
- ISO 14001 certification: November 1998



Yoshito Kato
Environmental Manager,
Managing Director
Plant General Manager

1. Activities in FY2001

As part of "Green Actions," the Honsha Plant has been carrying out environmental preservation activities as a member of the local community, such as cleaning the streets surrounding the plant, which are used by the people living in the community, and cleaning the agricultural waterways adjacent to the plant. Other actions being taken to prevent violations and complaints include the introduction of low-noise pressing machines that use motion-link mechanisms, the reduction of sulfur oxides through changing the fuel in the heat-treatment process, and regular monitoring of environmental measurements. To improve communication with the surrounding communities, the Honsha Plant has been taking actions that promote information disclosure and increase understanding, for example, inviting the heads of the 24 municipalities surrounding the plant for a plant tour and disclosure of information on PRTR substances.

2. Violations and Complaints

■ None

3. Environmental Data

● Air Pollution Data
(Conforming to the Air Pollution Control Law and Prefectural Ordinances)

Sub-stance	Equipment	Control value[1]	Actual measurement[2]
NOx	Boiler	142	87
		218	115
	Oven	184	84
		237	23
	Gas turbine	70	31
	Heating furnace	190	106
P.M.	Boiler	0.2	0.05
	Oven	0.2	0.002
	Gas turbine	0.05	0.002
	Heating furnace	0.4	0.008
SOx	(Area-wide total pollutant control)	74.8	35.3

1. The control values are shown in ppm for NOx, g/m^3N for P.M., and m^3N/Hr for SOx. The SOx item must follow the area-wide total pollutant control stipulated in Aichi Prefectural Ordinances.
2. The actual measurements of NOx and P.M. refer to maximum values with respect to the control values for each particular target equipment.

● Water Pollution Data
(Conforming to the Water Pollution Prevention Law and Prefectural Ordinances)

Substance	Control value	Actual measurement		
		Maximum	Minimum	Average
Water Discharged		14,900	6,700	8,900
pH	5.8 - 8.6	7.6	6.2	6.9
BOD	25 (20)	8.3	1.2	3.1
COD	—	21.6	4.6	8.4
SS	30 (20)	3.3	less than 0.1	1.0
Oil	5	1.6	less than 0.1	0.5
Copper	1	less than 0.01	less than 0.01	less than 0.01
Fluorine	8	0.3	less than 0.01	0.2
Zinc	5	0.5	less than 0.01	0.1
Soluble iron	10	less than 0.05	less than 0.05	less than 0.05
Soluble manganese	10	0.3	less than 0.05	0.1
Total nitrogen	15	14.9	9.6	12.4
Total phosphorus	2	1.8	0.8	1.1

★Note 1. The control values for BOD and SS show the highest value (daily average).
★Note 2. Discharged water volume unit: m^3/day
★Note 3. All figures are shown in mg/l, except for the pH item.
★Note 4. There are some other control parameters whose actual measurements are below the N.D. level. They include the following: phenol, cadmium, cyanide, organophosphorus compound, lead, chromium (VI) compound, arsenic, total mercury, alkylmercury, polychlorinated biphenyl, total chromium, trichloroethylene, tetrachloroethylene, dichloromethane, carbon tetrachloride, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, 1,3-dichloropropene, thiuram, simazine, thiobencarb, benzene, and selenium.

Note that the abbreviations mean the following.
*pH: Hydrogen ion concentration
*BOD: Biochemical oxygen demand
*COD: Chemical oxygen demand
*SS: Concentration of suspended solids in water

● PRTR-Target Substances

Substance	Amount handled	Released volume			Transferred volume	Volume recycled	Volume removed	Consumption volume	Volume generated
		Air	Water area	Landfill within site	Waste				
Zinc compounds (soluble)	17,400	0	360	0	2,000	40	0	15,000	0
2-Aminoethanol	6,050	0	0	0	5,500	0	550	0	0
Ethylbenzene	61,100	1,100	0	0	0	0	0	60,000	0
Ethylene glycol	11,000	0	0	0	11,000	0	0	0	0
Ethyleneglycol monoethylether	23,390	190	0	0	1,200	0	0	22,000	0
Xylene	448,600	50,000	0	0	0	0	8,600	390,000	0
2-Ethoxyethyl acetate	44,000	0	0	0	0	0	0	44,000	0
1,3,5-Trimethylbenzene	28,032	32	0	0	0	0	0	28,000	0
Toluene	1,437,000	37,000	0	0	0	0	0	1,400,000	0
Nickel compounds	1,734	0	64	0	940	0	0	730	0
Benzene	40,016	16	0	0	0	0	0	40,000	0
Manganese and its compounds	9,040	0	340	0	2,900	0	0	5,800	0

*Unit: kg/year
*Volume removed: The volume of substances that are incinerated, neutralized, broken down, or changed to other substances in the particular plant
*Consumption volume: The volume of substances that are changed to other substances through chemical reactions, or are contained in or accompanied with products and transported outside the particular plant
*Volume generated: The volume of substances that is generated unintentionally.
*Landfill within site: The volume of substances disposed of as landfill waste on the particular site

URL Environmental data on all 15 plants, housing works and the Environmental Center (energy recovery plant), similar to that above, is available at the following Web site:
http://www.toyota.co.jp/en/envrep/plantdata

Logistics

The logistics area is responsible for transporting vehicle parts and completed vehicles throughout Japan and overseas. In FY2001, Toyota's transport volume in Japan was approximately 3 billion ton-kilometers (ton times kilometers). In the logistics area, Toyota is taking environmental actions from the following three perspectives:

(1) Establishment of an environmental management system
(2) Reduction of CO_2 emissions by streamlining transport operations
(3) Reduction of packaging and wrapping material usage by simplifying specifications for packaging and wrapping, and promoting the use of returnable containers

Based on these objectives, Toyota has been promoting action at the development, design, procurement, and production stages. Improvement proposals that are applicable to all processes, as well as innovative approaches unique to logistics, are being implemented continually.

Enhanced Environmental Management

Creation of the Production Environment Logistics Subcommittee

In April 2001, the Production Environment Logistics Subcommittee was created within the Production Environmental Committee. This subcommittee has been working on establishing an environmental management system. In particular, it has been evaluating methods for comprehending and computing the actual total of CO_2 emissions, which constitutes important base data in promoting an environmental management system in the logistics area.

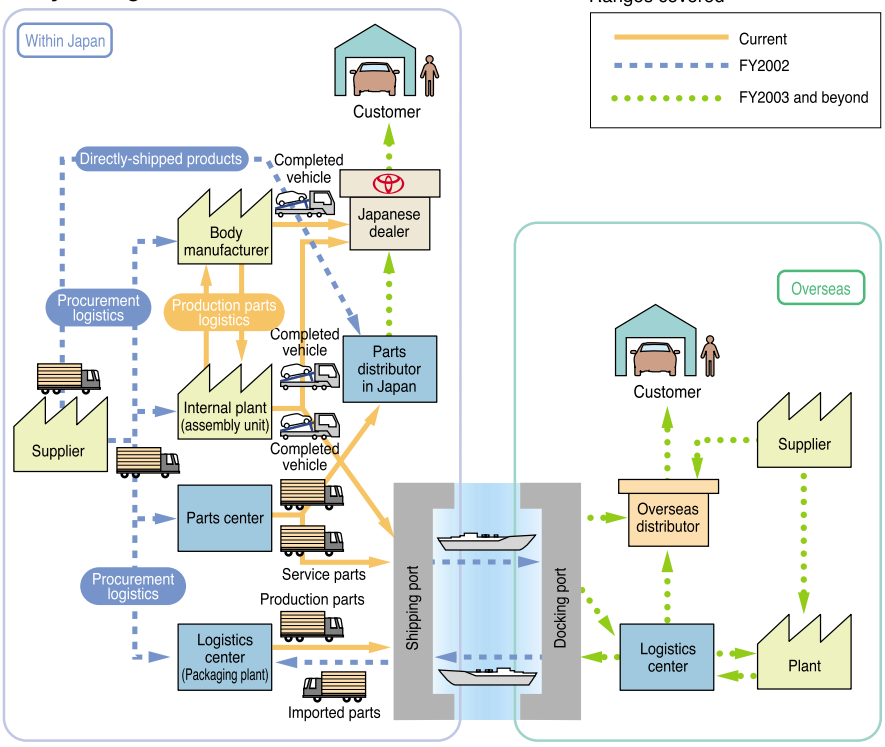
Reducing CO2 Emissions

FY2001 Goal

Reduce CO_2 emissions to 310,000 tons or less

Toyota reduced total CO_2 emissions during the transport of completed vehicles, production parts, and service parts to 290,000 tons. This figure is approximately 9% less than Toyota's FY2005 goal of 320,000 tons. Major actions taken included improvements in fuel efficiency, transport routes, and loading efficiency, as well as reduction in the number of shipments. In particular, stable navigation based on a central control system, designed to increase fuel efficiency of domestic cargo ships, made a substantial contribution in reducing CO_2 emissions.

■ **Toyota Logistics**



■ **Results of Major CO_2 Reduction Actions**

Group	Topic	Details	Reduction in CO_2
Logistics for completed vehicles	Improvements in fuel efficiency	Introduction of a central control system that ensures stable voyages for all 12 transport ships in Japan. Fuel efficiency improved by 7%.	2,900 tons/year
	Optimal route	Streamlining of the mixed loading routes between Yokohama Port and dealers in the Kanto Region. Reduction of 31 freight runs/day by cutting the number of routes from 7 to 2.	1,500 tons/year
Logistics for production parts	Improvements in loading efficiency	Improved loading efficiency for long-distance freight runs by improving the engine loading method. Reduction of 133 freight runs/year.	180 tons/year
Logistics for service parts	Reduction in the number of shipments	Improved loading efficiency through joint transportation with Hino Motors. Reduction of 3 freight runs/day.	220 tons/year
	Improvements in fuel efficiency	Direct shipment of parts bound for North America to Tobishima Logistics Center by eliminating transfer shipments for storage. Reduction of 2 freight runs/day.	40 tons/year

Truck (standard commercial truck)	177.3 g-CO_2/ton-kilometer
Railway (Japan Railways Cargo)	21.7 g-CO_2/ton-kilometer
Ship (coastal service)	35.6 g-CO_2/ton-kilometer

Expanding the Scope of Action

At present, Toyota is managing and collecting data to improve domestic logistics. In the future, Toyota plans to expand its scope of action by including the following:

(1) In FY2002, Toyota will begin managing procurement logistics* in Japan and transport processes to the port overseas.
(2) In FY2003 and beyond, Toyota will set up a model line and expand its scope of action to include the entire process lead-

*Procurement logistics:
Logistics involved in procuring parts from suppliers

Reducing Packaging and Wrapping Materials

FY2001 Goal

Reduce usage to 64,000 tons or less

Toyota reduced the volume of packaging and wrapping materials used for the transport of production parts and service parts to 54,000 tons. Major actions taken included expanded use of returnable containers, reuse through better communication and cooperation with affiliated companies, and simplifying of wrapping materials through material changes.

■ **Main Results of Activities to Cut Packaging and Wrapping Materials**

Group	Topic	Details	Reduction
Logistics for production parts	Increasing use of returnable materials	Switch from cardboard boxes to returnable plastic boxes (lightweight, foldable "F-Box"*)	170 tons/year
Logistics for service parts	Increasing use of returnable materials	(1) Switch from wooden to plastic pallets for shipments within Japan (2) Eliminate wooden pallets for cartons for overseas shipments and switch to cardboard	410 tons/year 260 tons/year
	Changing materials	Switch from intermediate cardboard boxes to plastic bags for overseas shipments by suppliers	200 tons/year
	Increasing use of reused materials	Reuse of car air conditioner cardboard boxes	100 tons/year

See p. 45 of Environmental Report 2001 for details on "F-Box"

Communication and Cooperation

Reuse of Cardboard Boxes Formerly Discarded

In December 2001, the Service Parts Logistics Division began recovering and reusing the cardboard boxes used for packaging car air conditioners, which had previously been discarded by pre-delivery inspection centers at dealers. This has reduced the volume of waste generated, as well as total resource material usage.

Eight parts distributors in Tokyo, Aichi, Osaka, and Fukuoka and other places used 160 tons of cardboard boxes last year, accounting for 60% of the total usage in Japan. Reuse has reduced that usage by roughly 1/3 to 54 tons per year. This was made possible only through communication and cooperation between Toyota and the parts manufacturer (Denso Corporation), parts distributors, and dealers.

■ **Cardboard Boxes for Packaging Car Air Conditioners, that Have Been Recovered for Reuse**

Before improvement

After improvement

Establishment of EMS

Service Parts Logistics Division Acquires ISO 14001 Certification

In September, the Service Parts Logistics Division, which manages the Haruhi Parts Center, the Kamigo Logistics Center, the Inasawa Parts Center, the Oguchi Parts Center, and the Tobishima Logistics Center, acquired ISO 14001 certification for domestic logistics.

In order to streamline logistics in Japan, the Division has been taking action with the following goals in mind:

(1) Reduction of CO_2 emissions during transport
(2) Reduction of packaging and wrapping material usage
(3) Improvement in packaging and loading skills to increase filling factors and loading efficiency
(4) Management to eliminate inventory of items that are no longer in demand

In everything from logistics planning to on-site management and operation, a total of 1,800 employees, including those from subcontracting companies who are stationed at each center, are working on proper maintenance and continuous improvement of this environmental management system in accordance with ISO 14001 standards.

ISO 14001 on-site operation audit

Recycling and Sales/After Sales

Kosuke Shiramizu
Executive Vice President and
Recycling Committee Chairman

Kosuke Shiramizu joined Toyota in 1963 and has gained experience in a wide range of technology and production areas since. He became a member of the board of directors in 1992, and conducted activities for establishing and improving the Environmental Management System, such as ISO 14001, as a Director responsible for environmental issues in the production field. He became a Senior Managing Director in June 1999, also taking charge of Environmental Issues as Chairman of the Production Environment Committee. He was appointed Executive Vice President and Chairman of the Recycling Committee in 2001.

In order to further strengthen its recycling initiatives, Toyota promoted recycling and the effective use of resources at every stage —development and design, production, use, and disposal— in accordance with the Third Toyota Environmental Action Plan. The principal activities conducted in FY2001 are listed below.

(1) The latest recycling technologies first adopted in the Celsior launched in 2000 were used on all new models and those that underwent complete redesign in FY2001.
(2) The Automobile Recycle Technical Center began operations.
(3) Sales of used parts was expanded nationwide.

Through close communication with the industry and society, Toyota also proactively participated in activities relating to the establishment of "The Basic Law for Promotion of the Creation of a Recycle-Oriented Society" and "The Law Concerning Recycling Measures for End-of-Life Vehicles."

■ Organization Chart (As of March 2002)

Recycling Committee

Chairman:
Executive Vice President Kosuke Shiramizu
Vice Chairmen:
Senior Managing Director Yasuhito Yamauchi
Senior Managing Director Hiroyuki Watanabe
Established in 1990
Studies easy-to-recycle designs of vehicles, development of reuse, and collection methods

Research and Development Subcommittee
Promotes prior assessment of recyclable designs and recoverability, as well as the reduction of substances of environmental concern

Production Engineering Subcommittee
Develops recycling technology for shredder residue of end-of-life vehicles

Domestic Subcommittee
Promotes dealer activities regarding the manifest system and chlorofluorocarbons

Overseas Subcommittee
Deals with collection and recycling networks for end-of-life vehicles

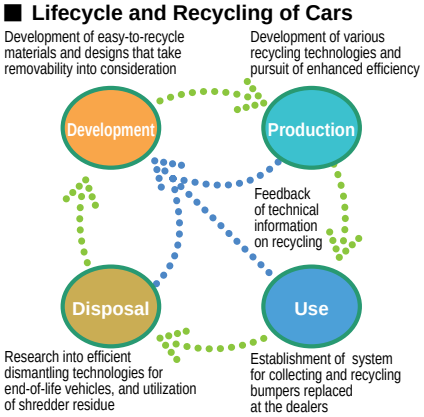
Special Projects

Recycling

Considering the Entire Lifecycle of the Product

From development to disposal, it is necessary to think of recycling during the entire lifecycle of an automobile. Toyota is involved in activities to reduce waste as much as possible and recycle whatever can be reused throughout the entire lifecycle of the automobile, i.e. development, production, use and disposal stages. In order to utilize limited resources more effectively, the results of these efforts are fed back to the development area, which in turn strives to make automobiles that take recycling into consideration.

■ Lifecycle and Recycling of Cars



Development and Design Stage

Enhanced Recoverability

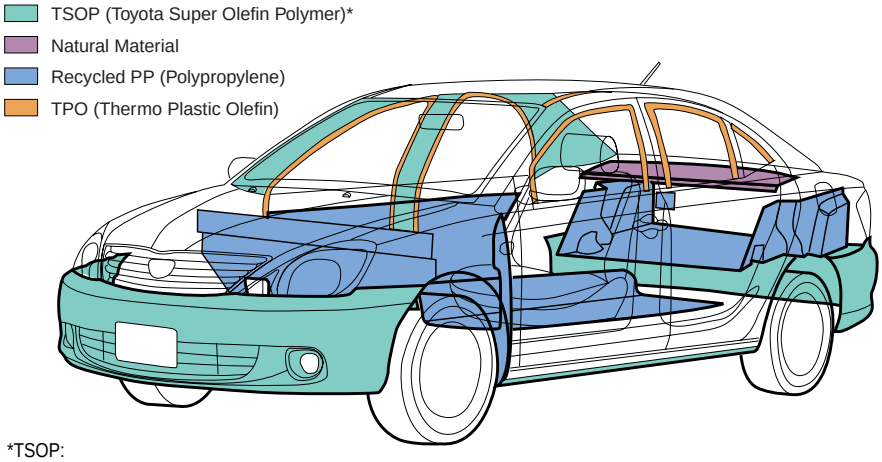
FY2001 Goals

- Incorporate recyclable designs into vehicles to be launched in FY2005, in response to the obligation of achieving a 95% vehicle recovery rate by 2015
- Improve dismantlability and switchover to easy-to-recycle materials considering future recycling and processing technologies
- Establish the Automobile Recycle Technical Center and promote research with a perspective based on the 3Rs

The Prior Assessment System in Recycling

Toyota applied its Prior Assessment System to all 14 vehicle series launched in FY2001 that were either new or underwent complete redesign. It was confirmed that vehicle recoverability is being achieved as planned. Further, the prior assessment design guidelines were reviewed from the perspective of the 3Rs, with "Reduce" and "Reuse" added to "Recycle," and evaluation categories such as long useful life and resistance to corrosion added to the guidelines.

■ Use of Materials with Consideration to Recycling and Recyclable Materials in the New Allion



*TSOP:
A thermoplastic polymer with exellent recoverability developed by Toyota that does not deteriorate even after repeated recycling

Material Selection with Consideration to Recycling and Effective Resource Utilization

TSOP is used in front and rear bumpers, as well as in interior and exterior parts of new models and those that underwent complete redesign. In addition, the use of the new TSOP was expanded to the new Soarer and other vehicles. The number of vehicle series that use recycled soundproofing material, RSPP, was expanded to a cumulative total of 18 vehicle series. Further, PET bottles used by employees of Toyota were collected and recycled into floor mats for vehicles.

See p. 50 for details on PET bottle recycling

Reduction in the Use of PVC Resin

Toyota is actively replacing polyvinyl chloride (PVC) resin in roof molding and other parts, with materials that are easier to recycle. As a result, the volume of PVC resin in the Premio and Allion has been reduced to 1/2 or less than that in conventional vehicles. Toyota has also developed a halogen-free wire harness that does not use any PVC resin or bromide-based fire retardant in the wire harness shield. The new wire harnesses will be used on future vehicles.

Halogen-free wire harness

Natural Kenaf Material Adopted

Kenaf, a natural material that is effective in preserving forest resources and sequestration of CO_2, is used as the base material in the door trim of the Soarer and in the package tray trim of the Camry, Premio and Allion.

Kenaf fibers

Door trim base material using kenaf

Reduction of Substances of Environmental Concern

FY2001 Goals

- Reduce the lead usage in new models to 1/3 or less of the 1996 level by the end of 2005

*A voluntary goal of the automobile industry (JAMA ELV Recycling Initiative)

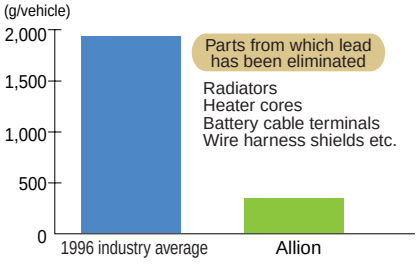
- Reduce the use of hexavalent chromium to 1/2 or less of the 1998 level by the end of 2005

Reduction of Lead Usage to 1/3 or Less Achieved in all New Models

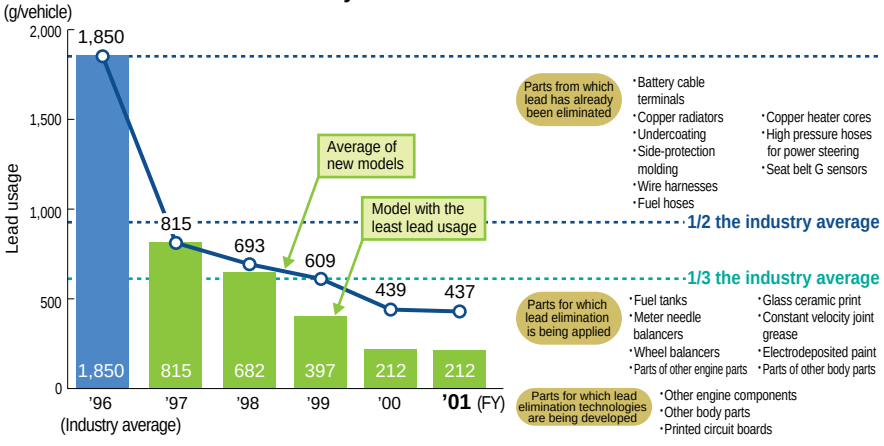
Toyota achieved ahead of schedule the automobile industry's voluntary goal of "reducing lead usage in models to 1/3 or less of the 1996 level by the end of 2005" in all 16 vehicle series of new models or those that underwent complete redesign in FY2001. Of the 16, further efforts towards reduction were made in five vehicle series to achieve lead usage levels of 1/5 or less. Moreover, Toyota also stopped using fluorescent tubes containing mercury, for meter backlights.

With respect to hexavalent chromium, Toyota is working to develop substitute technologies with the objective of reducing the usage volume to 1/2 of the 1998 level.

■ **Lead Usage Reduction in the Allion**



■ **Status of Lead Reduction in Toyota Vehicles**



Some of the previous indices have been changed. See p. 71.

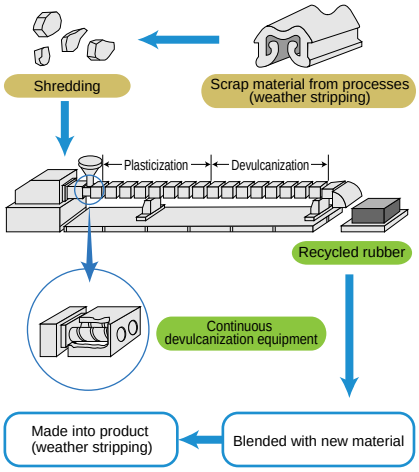
Production Stage

Recycling of Remnant Materials from Processes

Toyota continued to promote the recycling of remnant materials generated in the production processes.

As a result, 308 tons of weather stripping rubber, 548 tons of base cloth for airbags and 13 tons of triple-layer surface remnant material for instrument panels were recycled.

■ **New Waste Rubber Recycling Technology**



Use Stage

Reuse and Recycling System

Supply of Used Parts

In order to promote the reuse of automobile parts, Toyota has started to sell recycled parts,[1] using e-commerce, at parts distributors[2] nationwide from October 2001. In FY2001, a total of 5,960 items were sold between October 2001 and March 2002.

16 items under the parts distributors' brand "Ecolo Parts," including doors, fenders, grilles, bumpers, lamps, and other exterior parts for all Toyota vehicles are handled, as well as exterior and functional parts manufactured by parts manufacturers nationwide and supplied by major parts recycling distribution companies.

1. Recycled parts:
   A general term that includes used parts and rebuilt parts
2. Parts distributor:
   A company that handles logistics and sales of automobile service parts and accessories, formed through joint investment by Toyota and the local dealer. There are a total of 33 parts distributors nationwide.

Storage of used parts

Rebuilt Parts Supply

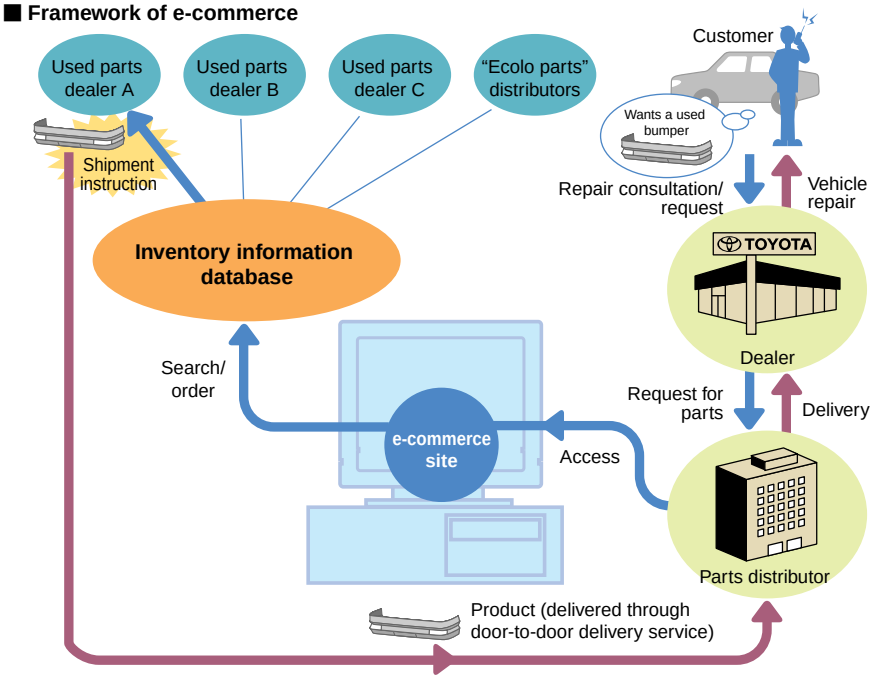
Toyota also cooperates with affiliated manufacturers to supply rebuilt parts[3] in order to promote their reuse.

■ Supply Results in FY2001

Parts	No. Supplied
Automatic transmission	21,500
Turbo charger	237
Power steering	16,800
Torque converter	5,700

3. Rebuilt parts:
   Parts that have been dismantled, cleaned, inspected for replacement of damaged or missing components, if necessary, and given a quality verification to ensure performance levels equivalent to new parts. Used parts are those that are reused after only cleaning and quality checks are performed.

■ Framework of e-commerce

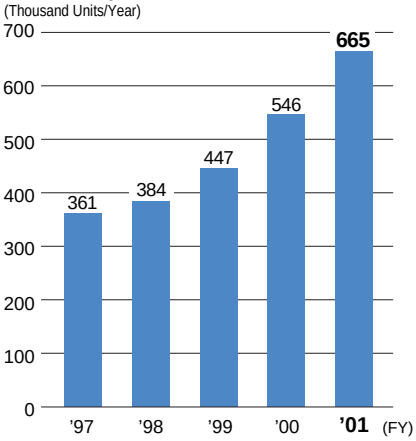


Collecting and Recycling of Bumpers

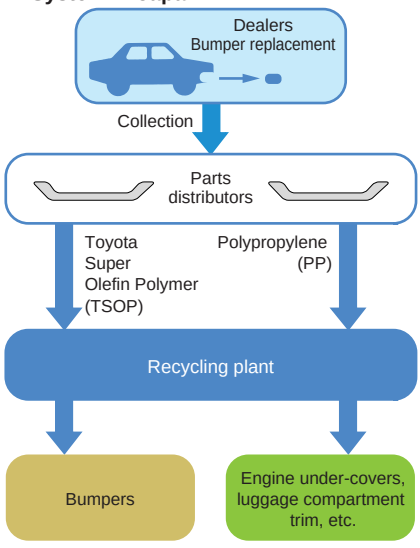
In order to promote the reuse of bumpers, the largest plastic part on an automobile, Toyota encourages recycling through its dealers nationwide.

In FY2001, 665,000 bumpers that were replaced at dealers (69%of those generated at all dealers) were collected and recycled.

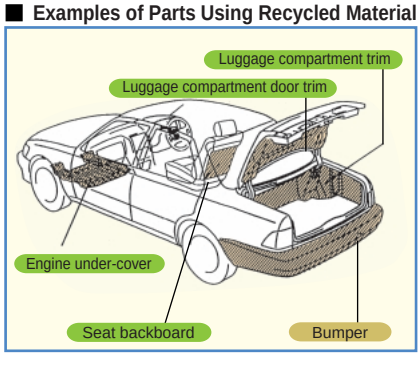
■ Trend in Collecting and Recycling of Bumpers



■ Bumper Collection and Recycling System in Japan



■ Examples of Parts Using Recycled Material



Disposal Stage

Utilization of Shredder Residue

Towards Achieving a Recovery Rate of 95%

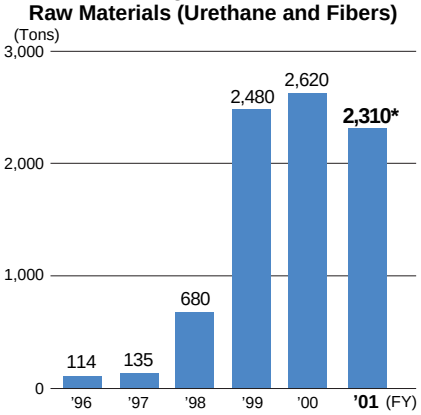
At the ASR[1] Recycling Plant, a joint venture with Toyota Metal Co., Ltd.,[2] Toyota achieved an 88% recovery rate in 1999, exceeding the 85% goal set by the Japanese government for 2002. In FY2000, Toyota achieved its voluntary goal of "development of technology for a commercial system to achieve a 90% recovery rate."

Currently, in order to develop commercial system technologies that can achieve "a 95% recovery rate by 2015," which is the goal set by the EU and the Japanese government, Toyota is working on developing recycling system technologies that are low cost and have actual application potential.

Results of the ASR Recycling Plant

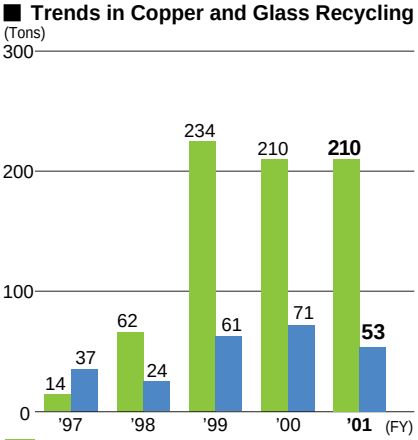
In FY2001, the ASR Recycling Plant collected and recycled copper, glass and the raw materials for RSPP,[3] from the shredder residue generated from end-of-life vehicles. It also used 4,660 tons of sorted plastics and rubber to produce substitute fuel for kerosene.

■ **Trends in Usage Volume of RSPP Raw Materials (Urethane and Fibers)**



*Used as sound-proofing products in about 100,000 new vehicles/month

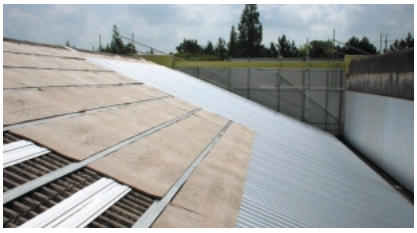
■ **Trends in Copper and Glass Recycling**



RSPP Used in the Construction Materials Area

Toyota has developed technology that enables RSPP, originally developed as a base material technology for automobile parts, to be used as thermal insulation in roofs of buildings.

In FY2001, a total of 10,000m^2 was installed at the Tsutsumi Plant, Tokai Kogyo Co. Ltd., and Denso Corporation. Toyota is considering replacing the slate roof of older plants with materials made from RSPP, thereby enhancing the functions of the building through the effects of external thermal insulation material.

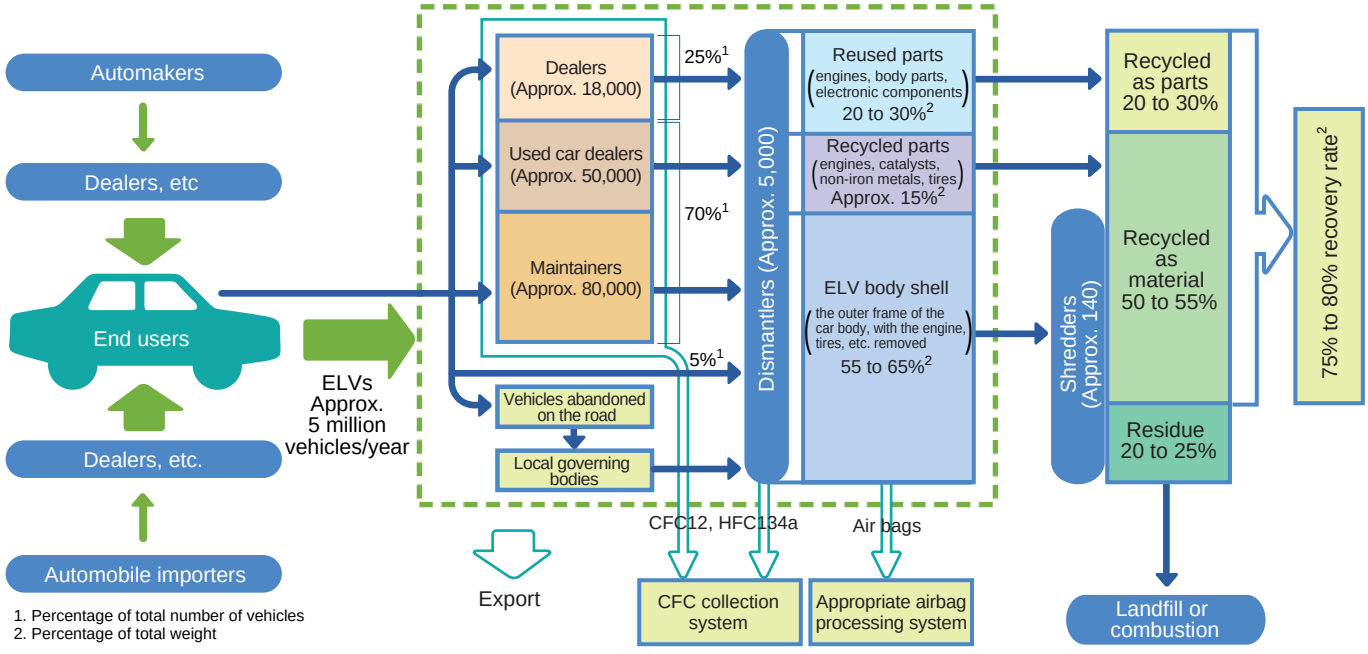


The roof of Tsutsumi Plant being replaced with materials made from RSPP

1. ASR (Automobile Shredder Residue): Residual materials generated when end-of-life vehicles are shredded. These consist mainly of polymeric resins.
2. Toyota Metal Co., Ltd.: A Toyota affiliated company that collects shredder residue and metal scrap
3. RSPP (Recycled Sound Proofing Products): Sound proofing material for vehicles made from the urethane and fibers sorted out from end-of-life vehicle shredder residue

See pp. 61 - 62 of Environmental Report 2000, for more information on the ASR Recycling Plant

■ **Flow of ELVs and Recycling Status**



1. Percentage of total number of vehicles
2. Percentage of total weight

Automobile Recycle Technical Center

In order to promote research on various topics including "easy-to-dismantle vehicle structures" and "appropriate and efficient dismantling technologies," Toyota established the Automobile Recycle Technical Center in April 2001, within Toyota Metal Co., Ltd.

In FY2001, the Technical Center focused on seven core topics including a market technology survey, benchmarking, and improved dismantlability of parts, obtaining 18 specific results including numerous design proposals and patent applications.

Research into Recycling and Dismantling Technologies in Japan and Overseas

In order to determine the direction for future research topics, it is important to understand current recycling and dismantling technologies. To this end, the Technical Center conducted surveys of and exchanged information regarding technologies at more than 30 dismantling and recycling companies in Japan and Europe in 2001, the first fiscal year of operation.

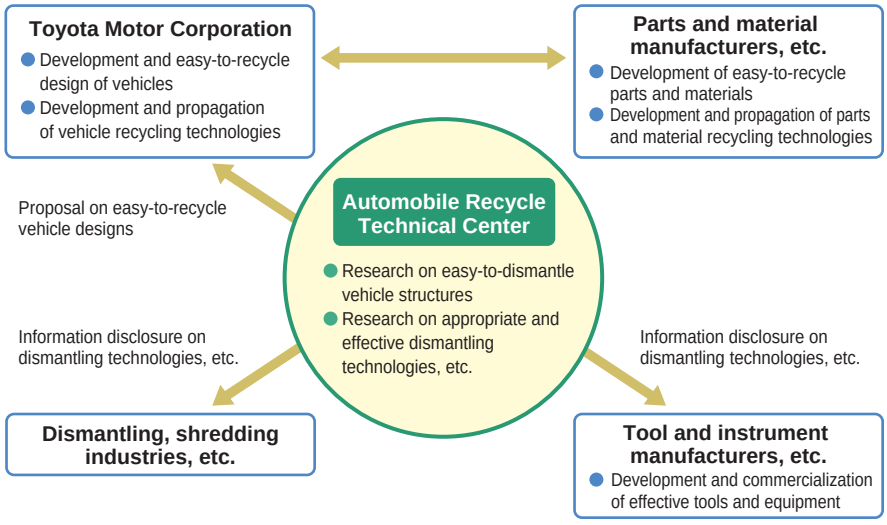
With the cooperation of these dismantling and other companies, the Technical Center works to further understand in detail the wide range of current technologies, investigation and assessment of which will be utilized for future study.

On-site survey of European conditions at the head office of a supervising company in Holland

Research on Easy-to-Dismantle Vehicle Structures

For research on easy-to-recycle vehicle structures and various dismantling issues —recoverability, dismantlability and removability of parts, separating and sorting of individual materials or their constituent materials and tools necessary for dismantling— the Technical Center chose some new vehicles that were recently launched in the market and conducted dismantling studies.

■ **Positioning of the Automobile Recycle Technical Center**

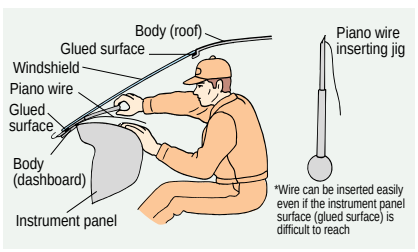


Dismantled seats

Research on Effective Dismantling Technologies

Based on surveys of current recycling and dismantling conditions, the Technical Center is conducting research on low cost and easy-to-use tools that enable quicker and easier removal of parts, fuel, and oils from end-of-life vehicles. For example, when removing windshields for reuse, a method that uses piano wire to cut the glued surface is commonly employed. The Technical Center is conducting research and development of methods and tools that make inserting the piano wire and cutting easier.

The Technical Center has also developed a device that enables the quick removal of fuel from end-of-life vehicles, while preventing spilling and contamination. Sales of this device were started in FY2001 by Toyota Tsusho Corporation.



Jig for inserting piano wire between glass and body

Fuel removal device

Fuel removal device in use

Recovery and Recycling System for Nickel-metal Hydride Batteries

Toyota is steadily promoting the recovery of Prius batteries, though yet few in number, from cars that were damaged due to accidents, floods or other reasons. In addition, a system similar to that for the Prius, has been prepared for the recovery and recycling of batteries from the Estima Hybrid, launched in 2001.

Cooperation Towards Creating a Recycle-oriented Society

Establishing a System for Recovery and Destruction of Chlorofluorocarbons

Toyota also cooperated with other automakers in the construction of the automobile industry's Designated CFC (CFC12) and Substitute Refrigerant (HFC134a) Recovery and Destruction System. This system is being developed in response to the Fluorocarbons Recovery and Destruction Law which will come into force in the autumn of 2002.

Test Run of an Airbag Inflator Collection and Processing System

Since October 1999 Toyota has been operating the Airbag Inflator Collection and Processing System, set up by the automobile industry, on a trial basis, and has been steadily producing successful results.

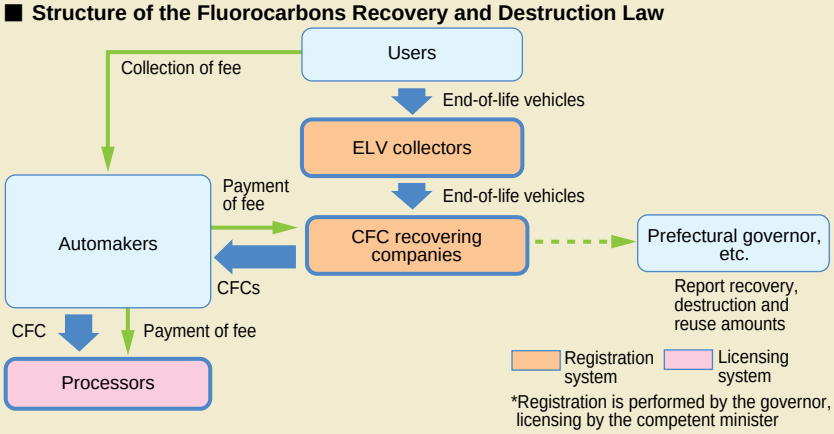
As a result, the number of companies registered as users of the system was approximately 1,400 by the end of FY2001.

Social Developments

Implementation of the Fluorocarbons Recovery and Destruction Law

The Fluorocarbons Recovery and Destruction Law goes into effect in the autumn of 2002. The law covers CFCs in air bags of end-of-life vehicles and requires their recovery and destruction. It provides that automobile manufacturers and importers are to recover CFCs and transfer them to processors for destruction. In order to improve the collection rate of CFCs, Toyota intends to actively perform its role as an automobile manufacturer.

■ **Structure of the Fluorocarbons Recovery and Destruction Law**



Social Developments

Towards Adoption of the Law Concerning Recycling Measures for End-of-Life Vehicles

In order to encourage the recycling and proper processing of end-of-life vehicles, the Law Concerning Recycling Measures for End-of-Life Vehicles (Automobile Recycling Law) was established on July 5, 2002, imposing certain obligations on automobile manufacturers and other concerned parties.

Role of Automobile Manufacturers and Importers

To recover and appropriately recycle chlorofluorocarbons, air bags, and shredder residue generated by end-of-life vehicles.

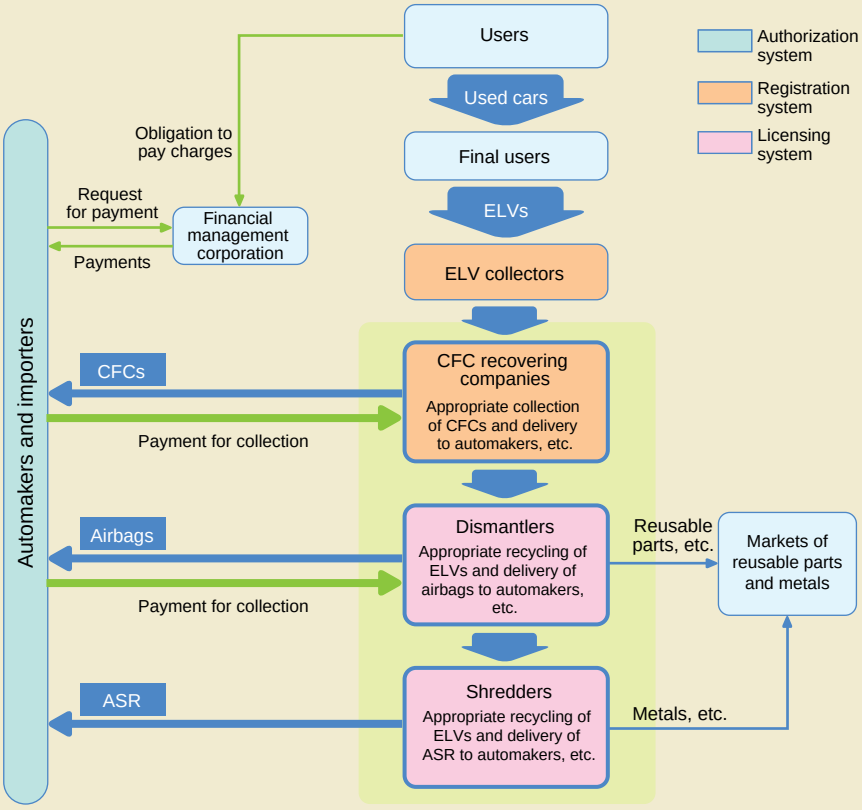
■ **Aims of the Law Concerning Recycling Measures for End-of-Life Vehicles**

1	Reduction of shredder residue, to cope with the shortage of final disposal sites for industrial waste.
2	Responses to non-functioning systems due to the high costs of final disposal and the low prices for iron scrap.
3	Prevention of unlawful dumping and improper processing.

Toyota's Actions Towards Implementation of the Law

Based on the fundamental idea of constructing an optimal system for Japan —an advanced, efficient system that involves minimum cost to society— while honoring existing systems, Toyota actively participated in industry discussions aimed at implementation of the law.

■ **Draft of the Law Concerning Recycling Measures for End-of-Life Vehicles**



Sales/After Sales

All Dealers Take Action in Accordance with Environmental Guidelines

Based on the Toyota Japanese Dealer Environmental Guidelines adopted by the Toyota National Dealers' Advisory Council, an organization of Toyota dealers, in FY2001 parts distributors and Rental/Lease dealers followed car dealers and Toyota Home dealers in establishing structures for conducting environmental activities and drafting action plans. All dealers of the Toyota Group are currently promoting environmental actions.

■ Dealer Environmental Guidelines

Environmental Standards

- Set environmental response levels to be met and clarify the timing by which they are to be met

Environmental Management

- Incorporate "active environmental responses" into corporate policy and annual policies
- Create structures and clarify persons in charge
- Conduct PDCA cycle activities to achieve goals

In addition, car dealers have started prefectural Environmental Issue Information Exchange Meetings in order to promote more effective implementation of the Environmental Guidelines by actively exchanging information on local regulations and waste processing methods.

In FY2002, Toyota plans to confirm conditions of each dealer by category, by visiting each outlet of the dealer in order to improve their environmental initiatives. Toyota also plans to further expand dealers' actions to include drawing up new improvement plans and other initiatives.

Toyota's Information and Support Activities

In FY2001, Toyota continued publication of the "Toyota Eco Communication News," to provide information concerning the environmental actions of dealers. In the future, Toyota intends to continue providing useful information in a timely manner.

■ Contents of the Toyota Eco Communication News

No.	Date issued	Main articles
5	July 2001	● Reported case examples at the All-Toyota Environmental Issue Information Exchange Meetings ● Reported on the observations in Switzerland, Germany, Sweden, etc. ● Enactment of the Home Appliances Recycling Law and progress made so far
6	October 2001	● Green consumer trend ● Law on Promoting Green Purchasing ● Trend in the Fluorocarbons Recovery and Destruction Law
7	January 2002	● Actions being taken by franchise stores in other types of businesses ● Automobile Recycle Technical Center inside Toyota Metal Co., Ltd.

Toyota Eco Communication News issued to dealers

Cooperation with Dealers toward Acquisition of ISO 14001 Certification

During FY2001, 17 dealers (including one parts distributor) acquired ISO 14001 certification, bringing the cumulative total to 23.

Toyota supports activities of dealers that seek to acquire ISO 14001 certification through a variety of means including group training and the provision of different kinds of information.

■ Dealers that Acquired ISO 14001 Certification

FY	Dealers
1999	Toyota Motor Hyogo Co., Ltd. Toyota Corolla Osaka Co., Ltd.
2000	Nagoya Toyopet Corporation Chiba Toyopet Co., Ltd. Tokyo Toyo-Pet Motor Sales Co., Ltd. Mie Toyopet Co., Ltd.
2001	Saitama Toyota Motor Corporation Aichi Toyota Motor Co., Ltd. Osaka Toyopet Co., Ltd. Sapporo Toyopet Co., Ltd. Fukuoka Toyopet Corporation Kobe Toyopet Corporation Yokohama Toyopet Co., Ltd. Hiroshima Toyopet Co., Ltd. Nagano Toyopet Co., Inc. Ibaraki Toyopet Corporation Tochigi Toyopet Co., Ltd. Saitama Toyopet Corporation Ishikawa Toyopet Co., Ltd. Gifu Toyopet Co., Ltd. Toyota Corolla Chiba Toyota Vista Kita Chiba Co., Ltd. Toyota Osaka Parts Distributor Co., Ltd.

Actions by Rental/ Lease Dealers

Hybrid Vehicles Available on Rent/Lease

Rental/Lease dealers have introduced hybrid vehicles equal to approximately 0.8% of all their vehicles. The Prius has been available on rent/lease since 1998 and the Estima Hybrid since 2001. They are used primarily by corporations that energetically promote environmental responses and customers with strong environmental awareness.

■ Number of Hybrid Vehicles Owned by Rental/Lease Dealers
(As of the end of March 2002)

	Rental	Lease
Prius	831	2,184
Estima Hybrid	9	164
Percentage relative to all rental/lease vehicles	1.3%	0.75%

Dealer Environmental Initiatives

Toyota Vista Ehime Corporation

All Employees Take Part in Voluntary Environmental Action on a Daily Basis

Toyota Vista Ehime Corporation, which was established with "Ever Onward" as its corporate motto, has eight sales outlets in Ehime Prefecture, employs 182 people, and sells about 2,300 vehicles annually. Even prior to the issue of the Toyota Japanese Dealer Environmental Guidelines, the president and all employees were voluntarily involved in environmental action, such as sorting waste etc., with successful results.

President Noboru Hiramatsu talks about environmental actions at Toyota Vista Ehime

President's Principles Live in Corporate Culture

President Noboru Hiramatsu explains, "I did not consciously intend to pester employees to be involved in environmental responses. I guess that as I was encouraging employees to work hard at their jobs and to work together, environmental awareness developed naturally." He believes that "younger employees learn by watching the older employees," and he has put into practice the idea that when someone takes the initiative based on his own principles, others will follow naturally. These principles and way of living of President Hiramatsu have become incorporated into the company's corporate culture. Numerous examples are visible where employees have acted on their own to implement improvements that do not require any expenditure.

The Corporate Stance is Cooperation with the Local Community

Thirty years earlier, when President Hiramatsu was working as a Director at a different Toyota dealer, there was a complaint that the rice in a field near a lighted billboard would not ripen because of the light from the sign. He promised to do something about it and looked into the situation. He gathered detailed on-site data on the angle of the lighting, the hours of operation, and so on and determined that innovations should be made to the lighting method so that there would be no impact on the rice. By quickly devising a solution and responding, he also gained the understanding of the farmer. President Hiramatsu explains that "I was born into a farming family. If I did something irresponsible, my parents would tell me that it was absolutely wrong to do something that would cause inconvenience to the farmers." This incident made President Hiramatsu feel strongly about the importance of taking the environment into consideration.

Voluntary Innovations that Do Not Add to Costs

The first thing that one notices at Toyota Vista Ehime is the thorough sorting of waste and the easy-to-understand labeling. In addition to the usual sorting of combustibles, plastics and metals, equipment for CFC recovery and reuse is installed at all bases, and a system for recovery and processing of all LLC was established. In addition, most of the working tables and cabinets for storing tools used during the recovery of oil elements were handmade by employees. A disorderly waste storage area was improved voluntarily by employees to make movement in and out easier. Recyclable materials are thoroughly sorted, resulting in processing costs savings of approximately 1 million yen.

It is said that at Toyota Vista Ehime, employees are happy to work on improvements concerning the environment and recycling. Work is performed starting with doing well what is possible, and is done on a voluntary basis. This is the result of "younger employees learning by watching the older employees" over a period of many years.

Although sorting was carried out, things were piled up disorderly

Installing handmade shelves enabled orderly disposal, making for easier in and out movement

According to President Hiramatsu, "Thanks to these efforts, our work site maintenance expenses are close to zero. I am truly grateful for the employee's enthusiasm."

Broad Cooperative Structures Are Essential

Toyota Vista Ehime's environmental responses are based on the idea that "broad cooperative structures and alliances are essential" — an idea that is shared by Toyota dealers throughout the region. Dealers from the Shikoku region were the first to engage in more detailed exchanges of information concerning the environment at the All Toyota Dealers Service Division General Managers Conference and other forums, and also to undertake a variety of different activities before dealers in other regions. The Environmental Issue Information Exchange Meetings mentioned on the previous page are the result of efforts toward nationwide expansion of these activities. In addition to car dealers, it is also necessary for parts distributors to develop a strong awareness concerning the environment. Toyota Vista Ehime plays the role of a coordinator for the entire region.

This has led to active environmental initiatives by all dealers of the Toyota Group in the Shikoku region, including training held last year at a final disposal site for Service Managers and Managers from parts distributors.

Managers visited a final processing site for industrial waste as part of their training program

■ Intelligent Transport Systems

Intelligent Transport Systems (ITS) are an attempt to solve the various problems of traffic and transportation through use of electronics and telecommunications technology. In terms of the environmental benefits of ITS, it has been estimated that in "30 years from now they will reduce fuel consumption and CO_2 emissions by around 15% and urban NOx emissions by around 30%."*

Toyota views ITS as a proposal ground for new social systems and is promoting active efforts toward further advances in automobiles and automobile utilization systems.

*Estimate made by ITS Japan and Telecommunications Technology Council

Next-generation Transport Systems

Crayon EV Commuter System

The Crayon EV commuter system, based on shared-use of the compact electric vehicle "e-com," aims to render smoother transport in the region through use of telecommunications technology and also to reduce environmental impact.

Toyota has conducted test operations on the Crayon at several locations since 1999. Electric vehicles are low in noise and do not generate emissions. Therefore they are looked to as one promising means of resolving environmental issues caused by urban traffic. However, issues relating to cruising distance, cost and other factors still need to be overcome. Toyota aims for widespread use of the Crayon system by capitalizing on the advantages of electric vehicles as a shared-use transport system mainly in urban areas. Regarding test operations on the Kyoto Public-Car System, in which Toyota has been cooperating since 2000, an approximate 100-day toll test was started in September 2001 during which issues were identified and possible responses studied. In the future, Toyota intends to further improve practical utility to increase utilization ratio from an operational viewpoint.

The Kyoto Public-Car System on which a 100-day toll test was started

Commercialization of IMTS

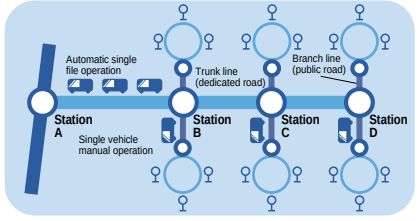
IMTS (Intelligent Multi-mode Transit System) is a transit system whereby vehicles travel in single file under automatic piloting on a dedicated roadway but can also be driven manually on public roads, thus combining the advantages of rail and bus transport.

Despite the appreciation of the importance of public transit systems in resolving the environmental issues posed by urban transportation, such as traffic congestion, air pollution, and traffic accidents, the costs in terms of infrastructure, etc., are high and the introduction of such systems is therefore difficult in practice. Toyota is engaged in efforts to develop and propose new public transit systems with low cost and small environmental impact. IMTS is part of these efforts.

Since 1999, IMTS has been under practical development towards commercialization on a dedicated track built at the Higashi-Fuji Technical Center. In April 2001, it was introduced at the Awaji Farm Park England Hill Area on Awaji Island, as a means for transport within the theme park. From October it began full-scale automated operations on a single-file run.

IMTS that started operation on Awaji Island

■ Schematic Diagram of IMTS



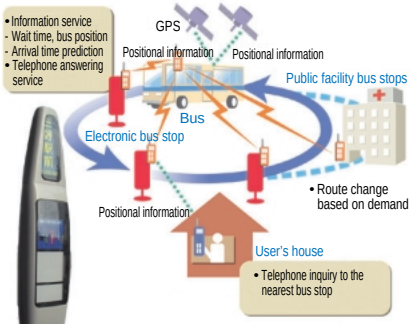
Logistics

Bus Location Guide System TIME b

In order to comprehensively increase the efficiency of human and freight transport, Toyota is creating and proposing a new logistics system which combines ITS technology with the expertise of the Toyota Production System (Just-in-Time).

From December 2000 to May 2001, a test operation to evaluate TIME b was conducted in Miyoshi-cho, Aichi Prefecture. Buses fitted with the Global Positioning System (GPS) are linked with a control center and with bus stops to allow the present location of the bus, its estimated time of arrival, and other operating data to be displayed at the bus stop. The system also enables automatic voice guidance in response to telephone inquiries and modification of routings. Due to an increase in passenger numbers since its introduction, the system is still operational.

■ TIME b System Diagram



Cooperation with Social Infrastructure

Electronic Toll Collection System

The Electronic Toll Collection system (ETC) uses telecommunications technology to automatically collect toll charges from vehicles passing toll points on toll roads. The system is expected to lead to easing of traffic congestion around tollgates and reduce exhaust emissions as vehicles drive through without stopping. Toyota has been commissioned with the installation of ETC facilities on major roads such as the Tomei and Meishin Expressways. Toyota has developed the retrofit-type ETC on-board unit and sold some 75,000 units in FY2001.

An ETC toll gate where vehicles can drive through without stopping

Biotechnology and Afforestation Businesses

In 1998, the Toyota Biotechnology & Afforestation Business Department was established in the Business Development Division. In 1999, the Toyota Biotechnology and Afforestation Laboratory, a foundation for biotechnology research was set up, and in 2001 the Biotechnology & Afforestation Business Division was established as an independent division. The Biotechnology & Afforestation Business Division is actively promoting business activities in afforestation, agriculture and other fields through the application of diverse technologies, based on its policy of contributing to the solution of issues such as food shortages and environmental degradation.

The Biotechnology Business

P.T. Toyota Bio Indonesia

P.T. Toyota Bio Indonesia (TBI) was established in 2001 as a joint venture with Mitsui & Co., Ltd. It produces animal feed and biodegradable plastics[1] using sweet potatoes as a raw material.

TBI is contracting with and organizing local farmers, aiming for a cultivated acreage of 6,000ha. The sweet potatoes grown will be harvested successively starting this autumn, and by the end of the year TBI plans to start production at a feed processing plant with an annual production target of 100,000 tons.

It also plans to start production of biodegradable plastics (polylactic acid) in early 2004. Towards this end, TBI is proceeding with research and development of the process of manufacturing lactic acid and the polymerization process for manufacturing polylactate from lactic acid. Current plans are to build the biodegradable plastics plant next to the animal feed processing plant.

1. Biodegradable plastics:
Plant-based plastics which have the same functions and properties as petroleum-based plastics but can be returned to the soil. Ultimately, they break down to water and carbon dioxide.

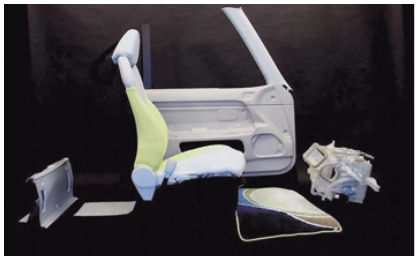
Wide expanses of sweet potato fields (Lampung, Indonesia)

Biodegradable Plastics as Automobile Parts

Since biodegradable plastic is made primarily from plants, which sequester CO_2 levels in the atmosphere, Toyota believes that they can contribute to the resolution of issues concerning CO_2 levels.

Accordingly, Toyota is conducting research on the heat resistance and durability of biodegradable plastics, with the goal of its eventual application as material used in automobiles.

Biodegradable plastics were used in the interior parts (such as pillar garnish) of the ES^3, which was presented as a concept car at motor shows.



Prototypes of automobile parts made of biodegradable plastic

The Afforestation Business

Establishment of Toyota Roofgarden Corporation

Toyota Roofgarden Corporation was established in December 2001 for the roof garden construction business using peat mined in China. It is engaged in construction of roof gardens as one means of easing the heat island effect in large cities.

Basic Principles of Toyota Roofgarden Corporation

1) To promote greening and contribute to easing of the heat island effect, purification of the atmosphere and energy conservation in buildings.
2) To promote construction of roof gardens in cities and contribute to environmental preservation by restoring the natural surface layer.

The roof garden construction system uses fully matured organic peat found in China. Peat is light in weight and has excellent water and fertilizer retention. Even a thin layer can be effective, producing an ideal soil for growing plants. Furthermore, after the soil has been mined in China, the land will be used for agricultural purposes, thus ensuring environmental restoration.

In FY2001, construction of roof gardens on rooftop verandas of Toyota's training facilities and on a rooftop parking lot at "CERSIOR SQUARE NISSHIN" (a condominium construction project by Toyota) were completed.

Roof garden on rooftop veranda of Toyota's training facility

Toyota Roofgarden Corporation has also developed and started sales of a new variety of lavender, "Dome Blue," which is heat resistant and can be grown in places with hot, humid climates.

In addition, Toyota Floritech Co., Ltd., a company that grows decorative (flowering) plants, started producing and selling mini roses, poinsettias and others from FY2000. Shipments of plants in FY2001 reached the levels originally planned.

New variety of lavender, "Dome Blue"

Developing Eucalyptus with 40% Greater Volume of Wood

Australian Afforestation Pty. Ltd., which was founded in Melbourne in 1998, is promoting tree planting projects and research into biotechnology. A tree planting project in Western Australia has been expanded to cover a cumulative total area of 580ha. In FY2001, the project was expanded into South Australia, afforesting 281ha of land.

In addition, by using methods for elite tree selection,[2] Toyota has developed a eucalyptus with a 40% greater volume of wood. It has begun experimental cultivation of these trees.

2. Methods for elite tree selection:
A technique using a physiological index from eucalyptus plants to select the best individual trees and propagate them

Eucalyptus plantation

■ Housing Business

Toyota's Housing Group has been strategically developing a comprehensive operation stretching from the sale of environmentally considerate 21st century homes to projects for condominiums and proposals for town creation. In FY2001, a total of 3,095 houses were sold.

In terms of environmental action, Toyota has teamed up with dealers, construction companies and suppliers in concerted action toward an appropriate response to the Construction Materials Recycling Law established in May 2002.

The "SINCÉ SMART STAGE" that won top ratings in five of the categories of the Housing Performance Index System

Environmental Management System

The Kasugai, Tochigi and Yamanashi housing works all acquired ISO 14001 certification in FY1998. All three housing works are involved in activities to reduce environmental impact through appropriate operation of the environmental management system. In FY2000, in addition to the "Eco Action 21," an environmental action plan that serves as a guideline for the industry, an independent "Toyota Housing Business Environmental Action Plan" was also created. Based on this plan, specific environmental action to be implemented each year is stipulated and activities are promoted.

Development of Environmentally Considerate Housing

Development of Environmentally Considerate Housing with Energy Conservation and Other Features

Toyota Home is engaged in the development of environmentally considerate housing under the "S&I Home Making Concept,"* applying technologies and designs to raise environmental performance from every angle, including use of solar power systems and full electrification, recycling of water, measures to reduce VOC emissions, reduction of waste, longer life cycles, and other aspects.

Toyota Home developed the "SINCÉ SMART STAGE," which was launched in April 2002, and has a performance standard equivalent to the top rating in five environmental-consideration categories (consideration toward heat environment, atmospheric environment, reduced structural deterioration, structural safety, maintenance and management) among a total of nine categories included in the Housing Performance Index System specified under the Housing Quality Insurance Law.

*S&I Home Making Concept:
Super Skeleton - reinforced supporting structural elements that do not change
Intelligent Infill - functions which continue to respond and change according to changing lifestyles

■ **Toyota Housing Business Environmental Action Plan and Goals**

Action guideline	Item	Action policy	Specific action items and goals
1. Development and supply of products with top levels of environmental performance	CO_2 reduction during the occupation stage	Improved insulation of new houses	At least 50% of supplied homes to comply with "Next-generation energy-saving standards" (FY2005)
		Active introduction of clean energy in housing	Fitting of solar power generation systems, etc., to supply at least 5% of power consumed during the occupation stage (FY2005)
		Highly energy-efficient lighting, use of built-in facilities and fixtures	15% improvement in energy efficiency through successive replacement by new products (FY2005)
	Long-life and durability of housing	Introduction of long-life warranty system for major structural supporting elements	At least 80% of homes to be provided with a 30-year long-term warranty contract (FY2003)
		Promotion of measures for maintenance and management against structural deterioration	At least 80% of contracted houses to correspond to top rating in Housing Performance Index System (FY2005)
	Management and reduction of the content of substances of environmental concern	Global management of chemicals, promotion of activities aimed at achieving industry-leading levels	Reduction of formaldehyde concentration in at least 80% of contracted houses (top rating in Housing Performance Index System) (FY2003) Toluene, xylene levels to conform to interior air quality guidelines of the Japan Federation of Housing Organizations
2. Pursuit of production activities that do not discharge waste	Promotion of measures to prevent global warming	Active promotion of CO_2 reduction measures	5% reduction in total CO_2 emissions by FY2005 compared to FY2001
	Waste reduction and resource conservation	Reduction of waste toward zero emission, promotion of resource conservation measures	50% reduction in combustible waste generated by FY2003 compared to FY1999
	Conservation of water resources	Renewed efforts for water conservation	20% reduction in total water consumption by FY2005 compared to FY1995
	Reduction of trash at construction sites	Reduction of on-site trash such as packaging and wrapping material, remnant material, and excess material	70% reduction by FY2005 compared to FY2000
3. Business partners are environmental partners	Enhanced cooperation with suppliers	Activities to propagate and establish the Environmental Purchasing Guidelines	Promotion and support of EMS, thorough management of substances of environmental concern, and promotion of efforts to acquire ISO 14001 certification by suppliers
	Enhanced cooperation with dealers	Activities to propagate and establish the Toyota Home Dealer Environmental Guidelines	Establishment of EMS, promotion and support of achievement of goals in Toyota Home Dealer Environmental Standards Increased support for environmental responses of Toyota Home dealers

Reduction of CO2 Emissions

Reduction of CO2 Emissions during the Occupation Stage

Toyota has set a goal of making at least 50% of the houses it supplies compliant with the "Next-generation energy-saving standards"* (thermal insulation standards introduced by the Japanese government in 1999), by the end of FY2005. Toyota is engaged in the development of houses with improved thermal insulation that require less energy for heating and cooling, thereby reducing CO_2 emissions.

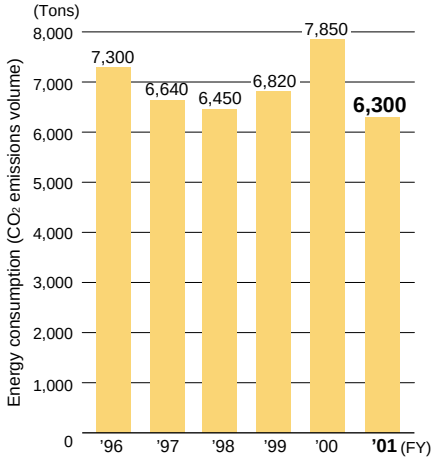
In FY2001, 12% of houses sold by Toyota complied with the "Next-generation energy-saving standards."

*Next-generation energy-saving standards:
New housing standards set by the government in the interest of environmental conservation including energy conservation and prevention of global warming

Reduction of CO2 Emissions during the Production Stage

In FY2001, Toyota reviewed its goal of "reducing total CO_2 emissions by 5% by the end of FY2005 from the FY2001 levels." Examples of specific action taken at the Kasugai Housing Works in FY2001 include control of the preheat temperature to match production specifications for painting of external walls, fitting automated doors on frequently used delivery and dispatch areas and stricter control of office temperature. By focusing on these activities, Toyota was able to achieve results that surpassed its goal.

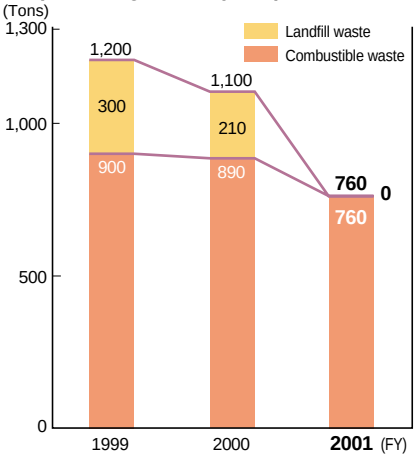
■ **Energy Consumption at Production Processes of Houses**



Trend in Volume of Waste Generated (Excluding that Recycled)

As well as maintaining the goal of zero landfill waste achieved in 2000, Toyota is promoting activities towards a new goal of "reducing the volume of combustible waste generated by 50% by the end of FY2003, compared to 1999." In FY2001, the three housing works generated a total of 760 tons of combustible waste (a reduction of 18% from FY1999) as against the goal of 870 tons.

■ **Trend in Volume of Waste Generated (excluding that recycled)**



A concrete example of reduction of combustible waste is seen at the Tochigi Housing Works. The excess of water borne paint sprayed during the external wall painting process was formerly disposed of as waste. In FY2001, a partial modification of the production process created excess capacity in the plant's wastewater treatment facilities. The excess paint is now processed as wastewater and only the sludge left after treatment is collected by a waste disposal company. This has reduced the volume of waste to be processed by 150 tons and the processing costs by around 2.1 million yen.

Wastewater treatment plant at Tochigi Housing Works

Activities at Dealers and Construction Sites

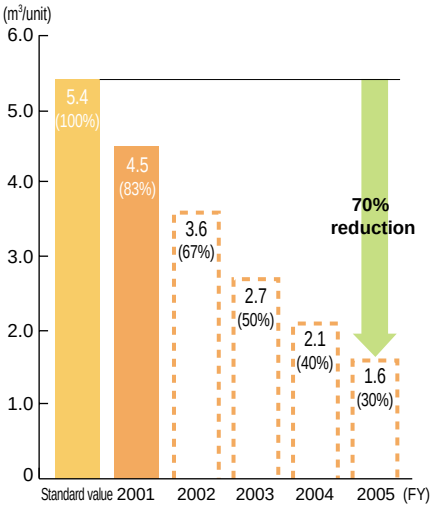
All Dealers Establish Systems for Strict Legislative Compliance

Based on the "Toyota Home Dealer Environmental Guidelines" created in 2000, all dealers ensured strict compliance of legislation, and in FY2001 each company implemented environmental initiatives in accordance with its own plans. Toyota confirms the progress made through reports submitted by each dealer.

Zero Trash Project at Construction Sites

In 2000, the volume of waste generated per unit at construction sites was 5.4m^3. With the goal of reducing this by 70% by the end of FY2005, a "zero trash project" was initiated. In FY2001, as a result of efforts made to reduce curing and packaging materials and remnant material, the volume of waste generated per unit was reduced to 4.5m^3 (17% reduction from 2000).

■ **Results and Goals of Activities to Reduce Waste Generation at Construction Sites**



Achieving Sustainable Development

Toyota is engaged in a broad range of activities intended to achieve "sustainable development" including active participation in the WBCSD, dialogs with parties in a variety of different positions, and cooperation with and support for environment-related non-profit organizations (NPOs). In particular, Toyota is promoting the activities of the WBCSD concerning future mobility in cooperation with automakers and other organizations around the world.

WBCSD

Sustainable Mobility Project

Participation in the WBCSD

World Business Council for Sustainable Development

The World Business Council for Sustainable Development (WBCSD) is a coalition of about 150 international companies united by a shared commitment to sustainable development via the three pillars of economic growth, environmental protection and social equity. As Council Members of WBCSD, the business leaders themselves engage in discussion, prepare specific plans and make recommendations towards sustainable development from a global perspective. Toyota has been a member of WBCSD since its founding, and Honorary Chairman Shoichiro Toyoda is currently serving as Vice Chairman of the organization.

World's Automakers and Related Industries Cooperate in Mobility Project

Based on concurrence with the ideas of the WBCSD, Toyota launched the Sustainable Mobility Project in April 2000 as an industry-specific project of the council in cooperation with the core member companies indicated below and has since promoted it. This three-year project should result in a much better understanding of what must be done to reach an accommodation between society's demand for mobility and the need to secure a sustainable future, assessing mobility's impact on the environment both calmly and objectively. A final report is scheduled for publication at the end of 2003.

■ Core Member Companies of the Sustainable Mobility Project

BP, DaimlerChrysler, Ford, General Motors, Honda, Michelin, Nissan, Norsk Hydro, Shell, Renault, Volkswagen, Toyota

SUSTAINABLE MOBILITY

Phase 1 of the project lasted from April 2000 to October 2001, during which time the current status of land, sea, and air transport and sustainable mobility were discussed. The results were presented in a report entitled "mobility 2001." This report is positioned as one evaluation of the current status of mobility.

URL "mobility 2001," the Phase 1 Report
http://www.wbcsdmobility.org/

Summary of "mobility 2001" Report

The WBCSD defines "sustainable mobility" as "the ability to meet the needs of society to move freely, gain access, communicate, trade, and establish relationships without sacrificing other essential human or ecological values today or in the future."

This definition means that a coexistence between "operational sustainability" (the ability to continue meeting people's expectations) and "economic, social, and environmental sustainability" (consideration for economic growth, the elimination of poverty and discrimination, consideration for people's health and ecosystems) is necessary.

Based on this type of perspective, "mobility 2001" established the sustainability evaluation indices shown to the right. It evaluated the current status of "demand and technology for mobility," "personal mobility in urban areas," "trends in intercity travel," "freight mobility" and other areas, and conducted a comprehensive diagnosis of mobility at the end of the twentieth century. The results included the conclusion that one major issue necessary for sustainable mobility is "maintenance of desirable automobile features and reduction (or elimination) of undesirable features in developed countries."

Creating Concrete Strategies

In December 2001 extraction of scoping for Phase 2 of the project was completed, based on the conclusions of "mobility 2001." As a result of discussions held in Working Group meetings concerning the specific methods of implementing Phase 3, sub-groups were established under the leadership of member companies and dialogs concerning individual topics are currently underway. The creation of concrete strategies for achieving sustainable mobility is an issue that will be addressed in the final report entitled "Sustainable Mobility 2030." Project activities are being executed towards its publication in 2003.

Toyota has established a committee of directors and managers from related divisions within the company, and with the participation of overseas affiliates in Europe and America (TMME and TMA), continues to promote the Sustainable Mobility Project.

■ Sustainability Scorecard

Measures to be increased	Developed world		Developing world	
	Level	Direction	Level	Direction
Access to means of personal mobility		+		+
Equity in access		–		?
Appropriate mobility infrastructure		–		–
Inexpensive freight transportation		+		+

Measures to be reduced	Developed world		Developing world	
	Level	Direction	Level	Direction
Congestion		–		–
"Conventional" emissions		+		–
Greenhouse gas emissions		–		–
Transportation noise		+		–
Other environmental impacts		–		–
Disruption of communities		–		–
Transportation-related accidents		+		–
Transportation demand for nonrenewable energy		=		=
Transportation-related solid waste		+		?

the particular measure is at an unacceptable and/or dangerous level
the level is of concern and needs improvement
the level is acceptable or shows signs of becoming so

\+ indicates that the situation appears to be moving in the desired direction
– suggests that the situation appears to be deteriorating
= no clear direction is apparent
? available information is not enough to make a judgement

Source: *mobility 2001*

Stakeholder Dialogs

In order to gain a better understanding of the expectations towards corporations among stakeholders in light of environmental management and for the purposes of reference for future direction, the "First Toyota Stakeholder Dialog" was held on November 1 and 2, 2001.

The dialog was held to engage in exchanges of opinions with a broad range of participants including NPOs, academic research organizations, and consumers concerning the appropriate role of corporations in achieving sustainable development.

Senior Managing Director Takashi Kamio addresses the participants

The theme of the first dialog was "The Role of Corporations in Sustainable Development." This topic was selected considering the importance of the role of corporations in achieving sustainable development and the need to always understand their responsibilities, keeping in mind that the World Summit for Sustainable Development (WSSD) will be held in Johannesburg in 2002.

Participants discussed a range of issues including "the positioning of environmental considerations in corporate management," "making product environmental information and corporate environmental information easier to understand," and "the need for considering the development of sustainable recycle-oriented societies in developing countries such as China even with the rapid increase in the use of automobiles."

The dialog was significant as it was the first opportunity for participants from different societal segments to engage in direct discussion on these topics, and the participants expressed their support for continued dialogs in the future. The selection of topics and operation will be improved and Toyota Stakeholder Dialogs will be held on a continual basis hereafter.

■ First Toyota Stakeholder Dialog Summary (Two-day Event)

Chairperson

An intellectual in the environmental field (a university professor)

Participants

A total of 33 persons including members of NPOs, environmental experts, government agencies, industries, and consumer groups, as well as concerned directors and others from Toyota.

Program

(1) Keynote address: Achieving a Sustainable 21st Century Society
(2) Presentation of issues: 1. Issues concerning the creation of a sustainable recycle-oriented society
(3) Presentation of issues: 2. The roles of corporations in achieving a sustainable 21st century society
(4) Presentation of issues: 3. Communication between corporations and society

Cooperation with Environmental NPOs

Establishment of the Shirakawa-go Nature School

In June 2001, Toyota announced that it will establish a retreat and study facility for environmental education on a site it owns in Shirakawa Village, Gifu Prefecture. The facility is scheduled to open in 2005.

The facility will make use of the culture of Shirakawa-go — a village of houses with thatched roofs built in the style of traditional Japanese architecture *gassho* — which is registered as a world heritage site, and the abundant natural environment at the foot of Mt. Hakusan. It will be used to educate children, who will play an important role in the realization of sustainable development, through hands-on experiences with nature.

Toyota will offer the site as a place for tourists to Shirakawa-go to enjoy the natural environment and for members of NPOs to gather and engage in discussions and activities, as well as conduct environmental preservation activities in the surrounding areas.

Virgin beech forest in the area of the planned facility

In accordance with the goal of "promoting activities in cooperation with Shirakawa Village and environmental NPOs," in July 2001 Toyota held a local inspection tour with 12 NPOs involved in environmental education and preservation. Representatives from the Shirakawa village office and local organizations also participated and exchanged opinions concerning environmental programs and facilities suitable to the local environment.

In addition, starting in October 2001, Toyota entered into a partnership with an environmental NPO, Japan Environmental Education Forum and Shirakawa Village to develop an environmental educational program, find and train personnel to work at the facility, and study facility construction methods with the goal of a harmonious coexistence with nature.

A meeting for exchanges of opinions was held at a *gassho* style house

Support for Environmental NPOs

Toyota supports a broad range of environmental preservation activities through membership in and sponsorship of 36 environmental NPOs and other organizations that promote environmental preservation and environmental awareness activities.

In FY2001, Toyota supported or sponsored a total of 43 programs, including the activities of the Nature Conservation Society of Japan and the Wild Bird Society of Japan.

■ Organizations which Toyota Supports or Sponsors or is a Member

Member	36 organizations including World Wide Fund for Nature Japan (WWF Japan), The Association of National Trusts in Japan, etc.
Events supported or sponsored	43 events including PR events at Nature Conservation Society of Japan, Awareness project during Bird Week at Wild Bird Society of Japan, Earth Day events, etc.

Communication

Promoting "preservation of the global environment" must not end with just one company's efforts; it is important, as a corporate citizen, to communicate on a broader level with society. Toyota is conducting a variety of communications activities including energetic information disclosure, seeking harmony with the global environment and in pursuit of achieving sustainable development.

Environmental Forum

In June 2001, the "Fourth Toyota Environmental Forum" was held in Tokyo. Through lectures, panel discussions and displays of the latest environmental countermeasure technology, Toyota presented ideal energy and motive power sources for automobiles from a broad perspective, including energy, infrastructure and environmental preservation, and introduced social movements and its eco car strategy.

In addition, Toyota held test drive sessions for the press to try out displayed vehicles such as the fuel cell hybrid vehicle FCHV-4.

President Fujio Cho makes the opening speech at the Environmental Forum

Communication with Customers and Information Disclosure

Environmental Fair at the Integrated Showroom

The "Toyota Environmental Fair" was held from June 16 to July 15, 2001, to celebrate the anniversary of the launch of the Estima Hybrid. It took place jointly at three locations, "Toyota Auto Salon Amlux Tokyo," "Toyota Auto Salon Amlux Osaka" and "Megaweb" in Tokyo, all of which were opened for the purpose of deepening communications with customers through cars.

In addition, the "E-com RIDE" featuring automatic driving in a small electric vehicle, EV commuter, has been in operation at Megaweb since its opening, and in FY2001 about 200,000 visitors had experienced this ride. Some of the opinions expressed included, "I was impressed by Toyota's high level of technology" and "I was able to understand Toyota's consideration towards the environment." Further, the test drive corner for hybrid vehicles, a permanent attraction at the Amlux salons and at Megaweb, was visited by approximately 3,200 visitors.

The "Environmental Fair" also displayed recycled goods. Seen above is the "E-com RIDE."

Tours of Toyota's Environmental Facilities

Toyota has made it easy to make reservations via its Web site for "Environment Tours," which include free observation of plant assembly lines, environmental facilities and the environmental corner at the Toyota Kaikan Exhibition Hall, etc. In FY2001, there were 444 tours with 6,812 participants.

URL For more details on the Environment Tour:
http://www.toyota.co.jp/company/factory/main_e.html

Participants of an Environment Tour observe the wastewater treatment plant at Takaoka Plant

Environmental tours no longer offered after February 2004.

Product LCA Information Disclosed

The "Toyota LCA Report," which summarizes Toyota's LCA efforts, has been included on the Web site (Japanese only).

See p.19 for details

Cooperating for Environmental Exhibitions

At the "Japan Expo 2001 Kitakyushu" held for four months from July to November 2001, Toyota exhibited hybrid vehicles, FCHVs, the EV Commuter "e-com" and also its recycling initiatives.

Toyota cooperated positively with test drive sessions and exhibitions under the theme of the "environment," sponsored and supported by the Japanese national and local governments, such as "Eco-Products 2001." In FY2001 Toyota provided displays in 48 such events.

Toyota's display at the Japan Expo 2001 Kitakyushu

Report on "ECO-MISSION" — Environmental Exchange Journey Across the Length of Japan in an Estima Hybrid

Team ACP's "ECO-MISSION," directed by automobile environmental critic Kiichiro Yokota, is a voyage in hybrid cars to visit the front lines of environmental preservation activities in different regions. The team, has thus far traveled through three continents, North America, Europe and Africa, in a Prius.

In FY2001, they set off from Yakushima Island on October 1 in an Estima Hybrid with the goal of reaching Megaweb in Tokyo on November 18. They traveled 8,800km in 49 days, visiting 37 places in 29 prefectures across Japan, where they met many people involved in various environmental preservation activities.

Starting with the ECO-MISSION of 1999 in North America, Toyota has been providing support in all aspects to this program.

The ECO-MISSION visits the "Woods of Prius Shinbokukai," realized through cooperation between Kanagawa Prefecture and Kanagawa Toyota Motor Sales Co., Ltd. Woods of Prius Shinbokukai participates in activities promoted by the local government, such as creating forests around water sources and planting and thinning out trees.

Social Contribution Activities

In 1989, Toyota established the "Social Contribution Committee" chaired by the President, and in 1995 the Committee drafted the "Social Contribution Principles." Toyota is striving to create an organizational climate in which each employee, as a citizen, can carry out activities independently, and is actively engaged in social contribution activities based on the themes of "research and innovation" and "building a prosperous society."

Forest of Toyota

Second Eco no Mori Seminar

The first session of "Eco no Mori Seminars" was held from October 1998 to March 2001, and was designed to train next-generation leaders who will be in charge of Satoyama (forests and wetlands near populated areas) preservation and creating forests. The second session started in August 2001, and is being held jointly with the same environmental NPO, Japan Environmental Education Forum.

Based on the activities thus far of the first session of seminars, the second session of seminars will add new viewpoints of recycle-oriented societal systems, environmental technology and environmental education. With the aim of producing human resources capable of "building a 21st century Satoyama society," it will continue developing various programs such as the "Concept Program Development Council" and "Camp 2 for Satoyama Interpreters" over a period of four years up to FY2004.

1,070 people have already visited the Foresta Hills in FY2001, an experimental forest near Toyota City, under the Forest of Toyota project, including 490 elementary school students, as part of an environmental study program.

Results of the "Eco no Mori Seminar" Activities Held during the Second Session in FY2001

Concept Program Development Council	4 times	Results published on the Web
Camp 2 for Satoyama Interpreters	3 times	82 participants
Kids Club for Playing in the Forest	4 times	152 participants
Group Newsletter "Eco no Mori" (revised version)	1st - 3rd editions	3rd edition x 4,000 copies issued
Internet Web site (revised version)	September 2001-March 2002	Approx. 4,500 hits

Elementary school students visiting as part of environmental studies

The "Eco no Mori" Group newsletter

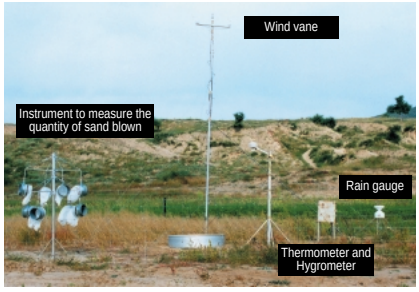
Reforestation Activities in China

In the Fengning Man Autonomous County of Hebei Province, China, a reforestation project has been started with the goal of reforesting 1,500ha in three years. In FY2001, the first fiscal year of the project, 500ha of poplar and wild apricot trees were planted as per schedule. This project is being conducted in cooperation with outside organizations, including the Chinese Academy of Sciences, Green Earth Center Japan and others, and Toyota aims to contribute to environmental preservation in China as one of the companies with business operations in the country. The environment in the region where planting is being done has undergone considerable degradation, characterized in particular by serious problems such as deforestation and desertification, exemplified by increasingly violent sandstorms.

Before tree planting

After tree planting

Toyota is not only promoting actual reforestation in response to the condition of the region that requires urgent tree planting, but also, in order to provide scientific and technical support, it has established a meteorological observation station to study environmental changes brought on by reforestation. The station monitors the environment, measuring wind speed and direction, amount of precipitation, and amounts of sand blown, etc. In the future, Toyota will make use of the experience it has gained through the biotechnology and afforestation business, team up with research facilities in China and promote further reforestation activities, thus continuing its efforts to contribute to environmental preservation.



The locally established Meteorological Observation Station

Toyota Environmental Activities Grant Program, Commemorating the Receipt of the "Global 500 Award"

In commemoration of Toyota winning the United Nations Environment Programme (UNEP) Global 500 Award in 1999, the "Toyota Environmental Activities Grant Program" was started in FY2000 to promote activities that support environmental improvement and preservation in the pursuit of "sustainable development," and is a part of Toyota's social contribution activities. Under the key theme of "Social Investment for Sustainable Development" the grant supports practical projects rooted in local communities both in Japan and overseas, in the fields of "technology" and "education." In FY2001, it provided grants to 15 groups, six in Japan and nine overseas.

See p. 53 for details

Development of a bio-digester for the promotion of renewable energy and the protection of the environment in rural areas in Vietnam (grant given in FY2000)

■ Environmental Education and Awareness-promotion Activities

Toyota considers environmental education and awareness-promotion activities an important basis for promoting environmental action and continually enhancing environmental performance. Environmental education is being developed with the objectives of evoking a feeling of affinity in terms of environmental policy of employees and improving practical application at each workplace. Efforts are also being made in awareness-promotion activities to enable employees to express their environmental consciousness in everyday life.

Environmental Education

Start of Education for Key Positions

Toyota implemented environmental education for department general manager class employees, key positions central to executing business, in the Engineering Group, Production Engineering Group and the Production Group. Senior executives from each division explained environmental responses and their importance to the department general manager class employees, with the purpose of strengthening environmental action through enhanced environmental awareness. Participants have expressed thoughts such as, "I was able to understand better the way of thinking and course of action being taken by the management regarding environmental preservation," "I now have a clearer picture of the positioning of current environmental initiatives," and "I got the feeling that compared with other companies we are still too lenient."

Environmental education for key positions at the Production Engineering Group and the Production Group (lecture by Senior Managing Director Yasuhito Yamauchi)

■ Major Curriculum for Education of General Manager Class Employees by Group

Engineering Group (June)	● Environmental actions focusing on designs with recycling in mind (lecture by Senior Managing Director Watanabe) ● Lecture by environmental manager from a home appliance manufacturer ● Specific examples from the particular division
Production Engineering Group/Production Group (November)	● Environmental actions focusing on resource productivity (lecture by Senior Managing Director Yamauchi) ● Lecture by environmental manager from an office equipment maker ● Action examples from the particular division

Environmental Education for New Recruits

Toyota also conducts environmental education for newly recruited employees in clerical and technical-related positions with the aim of heightening environmental awareness as corporate citizens and developing employees who can make use of this awareness in promoting business at their new assignments. In FY2001, Toyota's environmental initiatives in each area were introduced and environmental quizzes which made use of the Environmental Textbooks were included, with the purpose of evoking interest and building awareness among all participants.

Environmental Leader Education

Toyota held Environmental Leader Education, initiated in 2000, for the fifth time in August 2001, completing education for all Environmental Leaders. The education program included field trips to Toyota's environmental facilities and workshops with themes such as "The role of an Environmental Leader," "Toyota and environmental issues," etc.

In order to promote environmental action at each division, Toyota also continued dispatching the "Environment Monitoring Report" that provides environmental information on activities both in Japan and overseas on a biweekly basis to Environmental Leaders.

Awareness-promotion Activities

"Global Environment Month" for Raising Awareness

In 2001, Toyota held the "Global Environment Month" based on two topics — propagation of the "Third Toyota Environmental Action Plan" among all employees and reinforcing the importance of environmental issues. Events included lectures, recycling study groups and distributing an environmental awareness pamphlet to all employees.

Toyota has held "Global Environment Month" events each June since 1973, and they have taken root as activities for raising environmental awareness among employees.

Notice displaying the "Global Environment Month" events

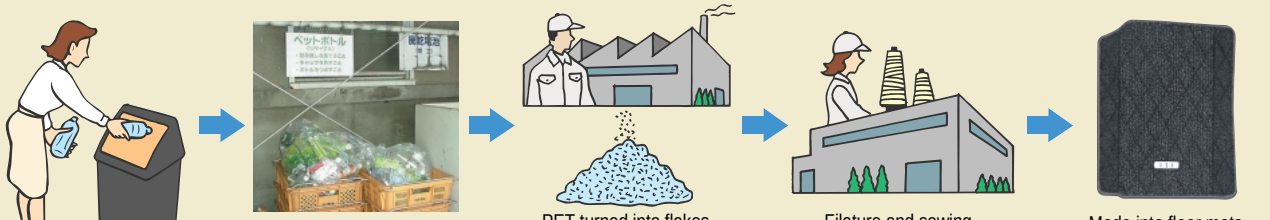
Recycling of PET Bottles

PET Bottles Collected at Toyota Turned into Car Accessories

Toyota started company-wide sorting and collecting of PET (Polyethylene Terephthalate) bottles* in FY2000. The number of PET bottles collected in 2001 reached nearly 2.8 million (100 tons). In order to promote their recycling, Toyota considered recycling them into floor mats. These have been adopted as the floor mats for the new "ist," which was launched in May 2002, and are now provided on nearly all models of the "ist." To produce floor mats for the "ist," a projected 70 tons of PET bottles will be recycled annually.

Toyota also anticipates that awareness of recycling among employees will increase as their individual efforts to sort and recycle PET bottles result in products for Toyota's cars.

*PET bottles:
Beverage bottles made of polyethylene terephthalate plastic



PET bottles collected and sorted inside the company

Resource Station

PET turned into flakes

Processing Plant

Filature and sewing

Product/ Manufacturing Plant

Made into floor mats for Toyota vehicles

Genuine Toyota parts

Safety and Health

Safety, along with the environment, is an important topic relating to the very foundation of a corporation. Based on the philosophy of "Respect for People," Toyota is making efforts to create "a safe and energetic work environment."

Basic Policy

"Safety is all about good management. It is everyone's responsibility, from senior executives to every employee at the workplace, to place safety first!"

5-year Policy (2000 – 2004)

1. Proactive prevention and enhancement of workplace culture through "Zero STOP6-type Accidents and Occupational Illnesses"
2. Building a workplace environment which is healthy for mind and body

Safety and Health

FY2001 Goal

Zero Fatal Accidents, STOP6-type Accidents and Occupational Illnesses

In FY2001 each workplace at Toyota held independent activities to prevent accidents, such as "creating a safe workplace and safe working procedures" and "ensuring substantial safety* of equipment," and succeeded in reducing the number of STOP6-type accidents to its lowest level ever. Although the number of STOP6-type accidents has reduced over the years, the goal of zero has not been reached yet. Nonetheless, in holding these activities, workplace teamwork has strengthened and equipment faults have decreased, so great success is being achieved from the point of view of operation and workplace culture.

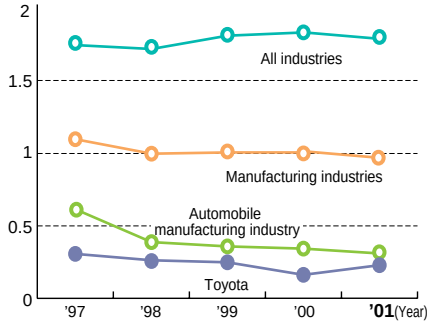
Main Action Taken in FY2001

1. Implementation of "Zero STOP6-type Accidents" projects led by Plant General Managers and Division General Managers
2. Pursuit of substantial safety from a global viewpoint
3. Countermeasures against ergonomic (musculoskeletal) disorders
4. Steady implementation of measures against noise and dust
5. Strengthening of management and guidance for construction work by contracted companies on Toyota's premises

*Substantial safety:
Completely eliminate or reduce the risk of accidents associated with work or equipment so as to ensure intrinsic safety at the workplace at the equipment design stage

STOP6 (six accident types):
Six types of accidents which may cause death or disability (caught in machines, contact with heavy objects, contact with vehicles, falls, electrocution, and contact with heated objects)
Occupational illnesses:
Injury from dust and noise, or musculoskeletal disorders

Industrial Accident Frequency (Frequency Rate of Lost Workday Cases)



Frequency rate of lost workday cases = (Number of lost workday cases / Total working hours) x 1 million

*The figures for all industries, manufacturing industries and the automobile industry for 2001 are preliminary

Building Good Health

FY2001 Goal

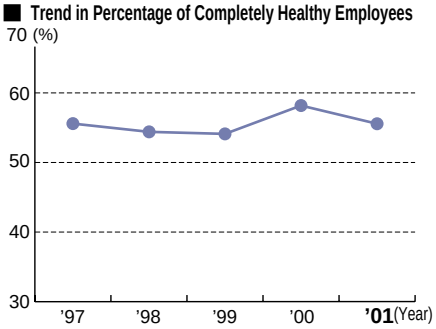
Increase the number of employees found to be completely healthy at employee physical checks to 70% or more

Toyota is conducting employee physical checks, including items required by law as well as its own items. In 2001, although the percentage of completely healthy Toyota employees was only 56%, participation in lifestyle guidance meetings, one measure toward early recovery, was almost 100%. Toyota was thus able to increase employees' concern about health matters throughout the workplace.

As an activity to prevent lifestyle-related diseases, Toyota is conducting a lifestyle improvement campaign, through which it is making efforts to cultivate good exercise habits and improve eating habits. Toyota also provided education and information to improve the awareness of each employee and get them to practice healthy habits, necessary to develop better lifestyles.

In the future, Toyota will strengthen its efforts to help employees improve their lifestyles by providing nutritional information on the food selected by each employee at the dining hall, as well as other means.

Trend in Percentage of Completely Healthy Employees



Mental Health Care

With regard to individual health care, a toll free telephone hotline for health consultation has been provided; a card with information about consultation contacts has been distributed; and additional specialist doctors have been assigned to four bases. The number of managers and supervisors undergoing training for ensuring health at the workplace has been expanded. In addition, Toyota also introduced courses on active listening, where supervisors learn to interact better with their subordinates, through actual listening experiences. Toyota considers active listening to be effective for prevention and early detection of mental health problems, so in FY2002, will conduct company-wide sessions.

Participants at an active listening course reflect on the importance of attentive listening

Prevention of Industrial Accidents

Establishment of Toyota Safety and Health Management Corporation

In October 2001, Toyota established jointly with four companies of the Toyota Group,* a new company "Toyota Safety and Health Management Corporation" (TSHM), for dealing with occupational safety and health matters. (Toyota's equity: 80%)

The Toyota Group has enhanced its efforts to establish systems to prevent industrial accidents and positively strengthen workplace culture. With the establishment of the new company, Toyota aims to expand these efforts to include the medium and small affiliated companies of the Group.

TSHM is a membership organization whose main activities are "diagnosis, evaluation and guidance," "education and training," and "rating." As of the end of May 2002, a total of 514 companies have become members.

*The four Toyota Group companies:
Toyoda Industries Corporation, Toyota Tsusho Corporation, Aisin Seiki Co., Ltd., and Denso Corporation

■ Volunteer Support Activities

The number of Toyota employees participating in various regional volunteer activities has been increasing, so in 1993 Toyota established the "Toyota Volunteer Center" within the General Administration Division. It aids employees and their families and former employees interested in volunteer activities, including those with previous volunteer experience, by "providing information" and "raising awareness" to be able to work independently, enjoyably and safely.

Clean Activities

The Toyota Volunteer Center cooperated with local organizations and carried out "clean activities" in the capacity of an executive committee.

In October 2001, with the objective of promoting symbiosis with local communities and understanding of volunteer activities, Toyota carried out activities to clean up the banks of the Yahagi River and its tributaries (within a scope of 2.8km along the river valley). Of the 1,571 participants, 981 were Toyota employees, and they collected 316 bags of trash for a total of about 670kg. For about half of the participants, this was the first time to participate in volunteer activities, and many said they were glad to have participated and wanted to do so again next year.

Clean Activities along Yahagi River

In activities with the local society, the external network created through communication and exchange of information with the local community or society is a valuable asset. Toyota considers it important for employees to develop a common awareness by participating in environmental preservation activities together with many people from different workplaces or backgrounds, and to this end, is supporting these activities through the Toyota Volunteer Center.

Toyota Volunteer Center inquiries desk

Providing Volunteer Information

"H.E.L.L.O. Map" is a newsletter that is distributed to around 3,200 registered employees who have a keen interest in volunteer activities, for the purpose of providing information. Volunteer information is also available on the Toyota Intranet, which all employees can access. In this way, the Toyota Volunteer Center supports employees involved in individual volunteer activities by providing information.

As one example, there is the voluntary tree planting project in China. This is a reforestation project in the Fengning Man Autonomous County in China's Hebei Province, being conducted by the Biotechnology and Afforestation Business Division together with the Green Earth Center Japan and the Chinese Academy of Sciences. Toyota solicited participation from employees to join tree-planting volunteers being dispatched by the Green Earth Center Japan. In April 2002, Toyota employees participated in tree planting in China.

See p. 49 for details on tree planting in China

Volunteers planting poplar saplings
(provided by the Green Earth Center Japan)

Supporting Employee Groups

Toyota employees have created autonomous "Volunteer Circles" based on common goals, and Toyota is supporting this by providing leadership training sessions, supporting to establish and expand their activities and fostering human resources. The volunteer groups, numbering 19 in total, make use of special talents of employees, and include groups that take part in activities related to international exchange and welfare, as well as other groups that focus on environmental themes, such as forest preservation. As one example, the "Forest Keepers" have been conducting voluntary forest maintenance activities in Asuke-cho and other places near Toyota City. In FY2001, 30 volunteers cooperated with Forest Keepers to trim the bamboo forest in the "Nature Center."

Forest Keepers conducting forest maintenance

Volunteer Information Exchange Meetings among Employees

For the purposes of recognition and encouragement, strengthening mutual research and activities, exchanging information and creating networks, Toyota holds information exchange meetings for employees involved in volunteers activities. In March 2001, about 360 employees participated in a mutual introduction of the details of individual group activities and exchange of information.

Awards System

Encouraging Volunteer Activities through "Award for Good Conduct" as Part of the President's Awards

Established about 10 years ago, the "Award for Good Conduct" is aimed at motivating and encouraging those involved in volunteer activities, and raising awareness of volunteer activities. It is awarded to individuals or groups in recognition of these activities by the company and the workplace. The award is given on the basis of the frequency and length of time of the volunteer activities as well as the number of years continued, degree of initiative, evaluation by society and recognition by other volunteer groups. In FY2001, four individuals and seven groups received the "Award for Good Conduct."

■ Environment-related Awards Received by Toyota

■ List of Award-winning Corporations and Products

Award title	Award to/for
The Japan Society of Mechanical Engineers Transportation and Logistics Division, Certificate of Merit for Outstanding Presentation JSME Medal for Distinguished Engineers (FY2001)	IMTS for park facilities Improvement of vehicle vibration and noise reduction performance
The Japan Society of Mechanical Engineers Engine Systems Award for Technological Achievement	Uniformed Bulky Combustion System (UNIBUS) Commercialization of diesel engine and Type-4 engine
Society of Automotive Engineers of Japan Technological Development Award (51st) The Asahara Science Award (51st)	Development of ultra-low emission, direct-injection gasoline engine Deactivation Mechanism of NOx Storage-Reduction Catalyst and Improvement of Its Performance
Toyota City Cultural Promotion Foundation The Toyota Culture Award	Prius
Energy Conservation Center Minister of Economy, Trade and Industry Prize	Estima Hybrid - Car with a new hybrid system
Clean Japan Center Award of Director-General Industrial Science and Technology Policy and Environment Bureau METI (Production Technology Division)	Extensive waste recycling business linked to local communities

■ Recycling and Production Environment-related

Item	Award title	Award to/for
Recycling-related	SCEJ Symposium on Fluidization Technology Award	Development of RDF fluidized bed combustion technology
	Clean Japan Center Award of Director-General Industrial Science and Technology Policy and Environment Bureau, METI	Development of technology for thermal recycling of waste
	Resource Environmental System Study Nagoya Municipal Industrial Research Institute	Construction of thermal recycling system for converting waste plastic into liquid fuel
Production environment-related	Commendation of best practices in energy conservation Chairman of the Energy Conservation Center Award	Improving efficiency by studying the factors related to age, season, and operating conditions that adversely affect efficiency
	Persons making achievement in energy management Chubu Area Economic and Industrial Policy Bureau, Director General's Award (Thermal category)	Person in charge of energy management
	Persons having made contributions to energy management Energy Conservation Center Branch Director's Award (Thermal Category) Energy Conservation Center Branch Director's Award (Electrical Category)	Two persons in charge of energy management Person in charge of energy management
	Engineers of excellence in energy management Energy Conservation Center Branch Director's Award (Thermal/Electrical Category)	Two persons in charge of energy management

■ Toyota Environmental Activities Grant Program, Commemorating the Receipt of the "Global 500 Award"

■ Results of FY2001 (See p. 49 for details)

Field	Project theme	Organization (country)
Technology	Protecting terrestrial biodiversity in Pohnpei, Micronesia	Conservation Society of Pohnpei (Micronesia)
	Substitution of conventional cooking fuels by plant oils in Guatemala: practical test for implementation	Institute for Agricultural Engineering in the Tropics and Subtropics (Germany)
	Co-production system for conservation of sturgeon and shrimp stocks in Caspian Sea	Atyrau Regional Government (Kazakhstan)
	Commercialization project for sustainable utilization of medicinal plant resources in central and western Himalayan communities	Society for the Conservation and Development of Himalayan Medicinal Resources (Japan)
	Biomass gasification for distribution of gas supply in rural areas of China	Zhejiang University [Hangzhou, Zhejiang] (China)
	Support for rehabilitation of devastated tropical peatland ecosystems in Central Kalimantan	Agricultural Studies Department, Hokkaido University Graduate School (Japan)

Field	Project theme	Organization (country)
Education	Implementation of the Environmental Education Guide in a designated eco-region of the Central Mountain Range in the Dominican Republic	Foundacion Moscoso Puello (Dominican Republic)
	"Green-Pack"* environmental awareness for schools in Bulgaria and Hungary	Regional Environment Center for Central and Eastern Europe (Hungary)
	Practice-based education program aimed at the preservation and betterment of the steppes of Inner Mongolia	Imin Soum Environmental Problem Research Group (Japan)
	Expanding "Roots and Shoots" environmental program to Japanese youth	Jane Goodall Institute Japan (Japan)
	"Youth to Youth" peer education for a sustainable future	Pronatura Peninsula de Yucatan, A.C. (Mexico)
	Environmental education at the Laguna del Tigre National Park, Guatemala	Conservation International-ProPeten (Guatemala)
	Participatory and active learning for Thai youths in the management of local resources for sustainable development	Eco-Community Vigor Foundation (Thailand)
	Leadership for Environment and Development program*	LEAD Japan Program (Japan)
	Build environmental awareness through the creation of footpaths in the Tama Hills area of Machida City and support the project by marketing the "Midori-no-Yubi" logo	Tsurukawa Community Development Citizens' Group "Midori-no-Yubi" (Japan)

*Previous-year recipient awarded again this year on basis of performance

FCHVs Running at Full Speed in the Century of the Environment
An Engineer's Dream to Pursue Them

A Dream Power Source
The Fuel Cell as a "Miniature Power Generation Station"

During a test drive session at the Fourth Toyota Environmental Forum held in Tokyo on June 19, 2001, reporters were gathered around the FCHV-4, a fuel cell hybrid vehicle. When a driver stepped on the accelerator pedal, the vehicle accelerated smoothly. He stopped the vehicle and got off to take a look at the muffler. The only thing being discharged from the muffler of this vehicle was water.

Test drive session at the Fourth Toyota Environmental Forum

"We have come a long way," said Senior Managing Director Hiroyuki Watanabe, who had been leading the development of fuel cell hybrid vehicles, as he looked on full of emotion. The situation was entirely different from about six years earlier. Back then, when Toyota demonstrated its first FCHV* on Midosuji Street in Osaka, engineers stayed close to the prototype vehicle because of a concern about its system operation.

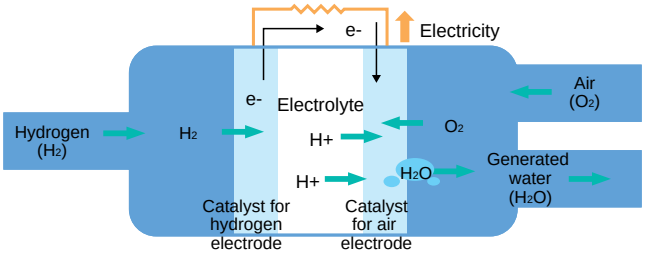
● ●

A fuel cell is a device that generates electricity by having hydrogen and oxygen react with each other, and is more like a "miniature power generation station" than a battery. To obtain driving force, the generated electricity is used to turn a motor. Since electrical energy is extracted through a chemical reaction, there is no mechanical loss and very little energy is lost as heat. The fuel cell's theoretical efficiency of 83% has a huge potential compared to that of current internal combustion engines, whose maximum efficiency is between 30 to 40%. Moreover, hydrogen can be supplied from a variety of sources and does not discharge any substance that will impact the environment. This is why the fuel cell is called a "dream power source."

The fuel cell was invented in the U.K. in 1839, and was used by the U.S. as a system for simultaneously supplying power and drinking water to the spacecraft Gemini in 1965. Fuel cells are classified into several types depending on the electrolyte used, and have the potential to be utilized in a wide range of applications, including automobiles, factories, homes, mobile devices, and spacecrafts.

*FCHV: Fuel Cell Hybrid Vehicle

■ **How a Fuel Cell (Polymer Electrolyte Type) Works**



Theoretical efficiency of fuel cell ⊿G/⊿H = 83% (hydrogen)

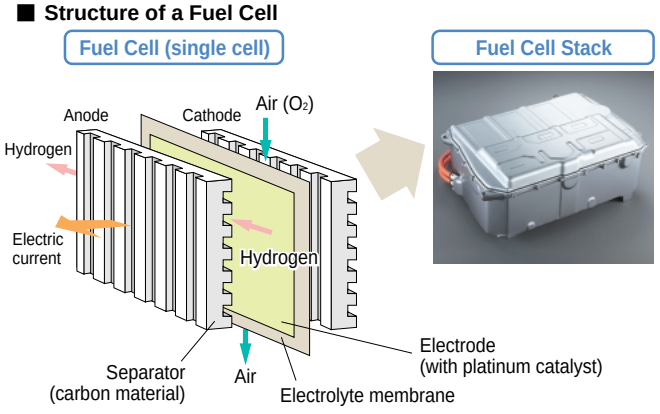
Application to Automobiles and a Multitude of Issues

Fuel cells have recently been in the spotlight, especially as the next-generation power source for automobiles, and all automakers are concentrating efforts on their development. Behind this feverish pace are both the fact that exhaust emissions regulations and CO_2 reduction standards are becoming stricter in many countries and regions and the fact that there are concerns about the future energy supply, i.e., the drying up of petroleum resources. To cope with this, it is necessary to escape from the current situation in which more than 90% of automobile fuel is dependent on petroleum, and to promote the development of new power sources that will enable the use of diverse energy sources. Fuel cells meet these needs since they use hydrogen which can be produced from various sources, have high energy efficiency, and discharge only water.

However, applying fuel cells to automobiles, which are used under severe usage conditions, is not easy. For example, the water produced as the result of electricity generation freezes at sub-zero temperatures, blocking the supply of hydrogen and oxygen. A fuel cell obtains the needed electrical power from a stack consisting of several hundred cells of approximately 0.8V. However, because these cells are connected in series, the entire fuel cell loses its capability if even one of the cells becomes frozen. To be on a par with gasoline engines, which can start immediately even under an environment of 30°C below zero, some sort of innovative technical development is needed.

Furthermore, the cruising range of a hydrogen-fueled fuel cell hybrid vehicle is so far limited to around 300km. In order for fuel cell hybrid vehicles to become widely accepted in the future, a distance of 500km on a full tank is a must. For the time being, the scarcity of hydrogen stations will limit the application of fuel cell hybrid vehicles to buses that operate on scheduled routes. To increase storage capacity, the possibility of increasing the storage and compression pressure to around 700 atmospheres from the current 250 to 350 atmospheres is also being considered. There is a multitude of other issues that must be resolved as well, such as cost, reliability, durability, and ease of use equivalent to conventional vehicles.

■ **Structure of a Fuel Cell**



History of Continuous Search for Development Possibilities

Toyota began developing fuel cell hybrid vehicles in 1992. A decision was made to develop fuel cells, which had been at the basic research stage at Toyota Central R&D Labs, for automobile applications. Toyota's basic policies on technology development are: (1) Develop all core technologies on its own without depending on other companies, and (2) Take various approaches to be able to cope with any social circumstance. Fuel cells were no exception, and comprehensive research and development on everything from materials, parts and structures, to manufacturing technologies began.

Hydrogen can be supplied to a fuel cell either directly or by extracting hydrogen by reforming a hydrocarbon fuel, such as gasoline and methanol, on-board the vehicle. Toyota's development team tried both approaches. Prototype No. 1 developed in 1996, which was described at the beginning of this report, was based on a hydrogen-absorbing method that extracts the hydrogen stored in a titanium alloy. In the following year, Toyota developed the world's first prototype vehicle with a methanol reformer on-board. However, because the first type required advances in technologies for storing a large volume of hydrogen in order to achieve a reasonable cruising range, and the second type required efficiency improvement in reforming technologies, neither technology was a match for the existing power sources.

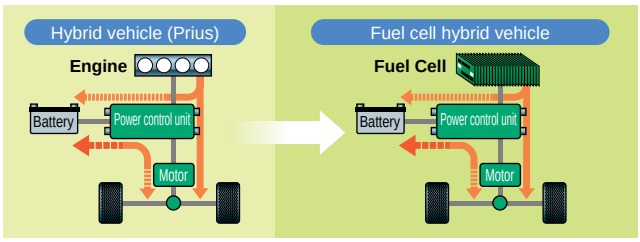
Efficiency Improvement through Combination with Hybrid Technology

"Will fuel cells ever become viable?" This question used to haunt the development team because fuel cells were an unknown area, completely different from internal combustion engines. Back in 1992, the development team for the electric car, which was considered the closest to the ultimate eco car, was also having a problem in increasing cruising distance because of the lack of progress in battery technologies. Then a ray of hope shone. It was the performance of the Toyota Hybrid System (THS) announced in 1997 and the market reaction to the Prius which uses the THS.

The prototype vehicles announced in 1996 and 1997 were hybrids using both fuel cells and batteries. The reason for adopting this method was the efficiency characteristics of fuel cells. Fuel cells are most efficient during low- to medium-speed operation (40 to 80km/h). Their efficiency is low during idling and when driving on congested streets, and also deteriorates during high-speed operation. Therefore, an idea was brought forth to improve the vehicle efficiency by using batteries to cover up for the weak areas of fuel cells.

As development of the THS advanced, the merging of fuel cells with hybrid technologies, such as regenerative brakes, became highly significant. Toyota already possesses ample experience in hybrid vehicles, which can be utilized to develop fuel cell vehicles with even greater efficiency, i.e., a fuel cell hybrid vehicle — an FCHV.

■ Toyota's Hybrid Technologies



■ FCHV Overall Efficiency

	Fuel efficiency (Well to Tank) (%)	Vehicle efficiency (Tank to Wheel) (%)	Overall efficiency (Well to Wheel) (%)
Gasoline vehicles	88	16	14%
Gasoline HV	88	30	26%
High-pressure hydrogen FCV	58	38	Without HV control 22%
FCHV-4		50	With HV control 29%
FCHV goal	70	60	3 times better than gasoline vehicles 1.5 times better than gasoline hybrid vehicles 42%

Overall efficiency (Well to Wheel) (%): 0 10 20 30 40

Estimated by Toyota

As a matter of fact, the vehicle efficiency of the FCHV-4, which was announced in 2001 and uses high-pressure hydrogen as fuel, is approximately 3 times that of gasoline vehicles in the same class, and approximately 1.7 times that of hybrid vehicles. The efficiency of producing hydrogen at fuel manufacturers is, however, lower than that of manufacturing gasoline. Improving this efficiency would further improve the overall efficiency of fuel cell hybrid vehicles (Well to Wheel — "from oil wells to vehicle wheels" = fuel efficiency x vehicle efficiency).

■ History of Toyota's FCHVs

1992: Began developing fuel cells

Oct. 1996

Developed an FCHV fitted with fuel cells and a hydrogen-absorbing alloy tank, developed by Toyota on its own. Participated in a parade in Midosuji, Osaka with the new FCHV.

Sep. 1997

Announced the world's first FCHV with an on-board methanol reformer.

Feb. 2001

Announced the FCHV-3 fitted with fuel cells and a hydrogen-absorbing alloy tank with significantly larger output.

Jun. 2001

Announced the FCHV-4 containing a high-pressure hydrogen tank and the Toyota FC Stack which had been developed by Toyota on its own. Began testing it on public roadways.

Jun. 2001

Developed a low-floor large city bus, the FCHV-BUS1, which uses high-pressure hydrogen as fuel, jointly with Hino Motors, Ltd.

Oct. 2001

Announced the FCHV-5 with an on-board CHF reformer.

High-pressure Hydrogen-based FCHV-4 Begins Running on Public Roads

In June 2001, Toyota announced the FCHV-4, which uses high-pressure hydrogen as fuel.

This vehicle, based on the Kluger V and equipped with a polymer electrolyte fuel cell called the "Toyota FC Stack," developed by Toyota on its own, has a maximum output of 80kW, a maximum speed of at least 150km/h, and a cruising distance of at least 250km. This performance is currently at the top level in the world.

The FCHV-4 became the first hydrogen fuel cell test vehicle to be approved by the Ministry of Land, Infrastructure and Transport, and subsequently began test runs on public roads in Japan. So far, five vehicles have acquired license plates, and Toyota is currently collecting operation data under actual conditions of usage. In the summer of 2002, Toyota plans to participate in a verification test to be led by the Ministry of Economy, Trade and Industry.

In July 2001, Toyota entered two FCHV-4 vehicles in the California Fuel Cell Partnership (CaFCP), a fuel cell vehicle testing project on public roads in the State of California, and began road testing. CaFCP is a project for U.S. government agencies, automakers, and fuel manufacturers to cooperatively evaluate vehicle development, fuel selection, and fuel supply infrastructures. It also carries out activities to increase public awareness in addition to collecting data. Seven FCHV-4s in Japan and the U.S. had traveled a combined total of approximately 75,000km by the end of March 2002.

Toyota, jointly with Hino Motors, Ltd., has also developed a large bus intended for operation on scheduled routes, the FCHV-BUS1 (with capacity for 63 passengers), which uses high-pressure hydrogen fuel. The bus was announced in June 2001 and is being tested on a test course toward commercialization.

FCHV-4 running in Sacramento, California

FCHV-3 Based on Hydrogen-absorbing Alloy Awaiting New Developments

Meanwhile, in parallel with the high-pressure hydrogen type, Toyota continued to improve the hydrogen-absorbing alloy-type fuel cell vehicle, which was paraded along Midosuji Street as Toyota's FCHV Prototype No. 1. It was announced as the FCHV-3 in February 2001. Toyota has significantly enhanced the vehicle's output, increasing its maximum speed to at least 150km/h and extending its cruising distance to at least 300km. The FCHV-3 could be considered the first complete FCHV based on a hydrogen-absorbing alloy. However, there was a problem in terms of weight. Extracting hydrogen from the alloy requires both cooling and heating functions. Including the devices for these functions, the fuel tank alone weighed approximately 300kg. The systemic challenges of the hydrogen-absorbing alloy-type have basically been overcome with the FCHV-3. The next step is to search for and research a new material that is lighter and can absorb and store more hydrogen.

Another FCHV that Assumes a Society with Varied Energy Sources

For the long term, hydrogen is most promising as the ultimate clean fuel. However, it is difficult to establish a hydrogen infrastructure within a short period. Therefore, Toyota thought it necessary to find a fuel that can be used by existing internal combustion engine vehicles as well as fuel cell vehicles. That fuel is clean hydrocarbon fuel–CHF.*

CHF is a liquid fuel that does not contain sulfur, which damages the catalyst in a fuel cell, and will not require a new infrastructure because it can utilize existing gasoline stations. Moreover, CHF can be produced not only from petroleum but also from natural gas and coal, whose reserves are plentiful. In addition, because CHF can also be used in internal combustion engines, it can reduce exhaust emissions and CO_2 emissions from existing gasoline vehicles. In January 2001, Toyota made an announcement on a joint CHF development project, together with its development partners GM and Exxon Mobile, and announced in October of the same year the FCHV-5, fitted with a CHF reformer.

Of course, many issues still remain. Close cooperation among automakers, fuel suppliers, and governmental agencies will be essential for CHF to become widely accepted by the public. As for the vehicle itself, its CHF reformer must be made smaller and its start-up time must be reduced.

*CHF:
Clean Hydrocarbon Fuel

■ **Toyota FCHV Characteristics and Issues**

Vehicle	Hydrogen-storage (generation) method	Maximum speed	Cruising range	Major issues and improvement directions
FCHV-3	Hydrogen-absorbing alloy	150km/h or faster	300km or longer	Develop new hydrogen-absorbing alloys to reduce weight
FCHV-4	Compressed hydrogen	150km/h or faster	250km or longer	Extend cruising range beyond 500km by increasing hydrogen-compression pressure
FCHV-5	CHF reformer	—	—	Achieve compact system size by improving the reforming technology
FCHV-BUS1	Compressed hydrogen	80km/h or faster	300km or longer	Achieve a zero-emission, low-noise bus for urban use

Inter-disciplinary Center

In order to overcome these issues and promote further development, in January 2002 Toyota reorganized the FC System Development Division and the BRFC Production Engineering Department into the new FC System Development Center. Three subgroups —the FC R&D Management Department, FC System Development Division, and FC Production Engineering Division— were formed under the Center. Senior Managing Director Hiroyuki Watanabe was appointed General Manager of the Center to lead approximately 450 members. It was the first time in its 65-year history that Toyota established an inter-disciplinary organization by removing the boundary between product development and production engineering to create such a Center. Toyota also asked its key parts manufacturers to cooperate in developing parts, such as compressors, pumps, valves, and sensors, that are not used in existing internal combustion engines. These events emphasize the high target hurdles that Toyota has to overcome.

When TMC President Fujio Cho toured a site that was developing production technologies for fuel cells, he encountered unfamiliar materials and parts manufacturer names, which drove home the point that development would not be able to proceed without the use of completely new, previously unthought technologies. He is said to have remarked, "This reminds me of the early 1960s when we were trying to feel our way to developing production technologies."

Harmony of Vehicles, Fuel and Infrastructure as Keys to Broad Acceptance

Reading recent media reports on fuel cells, one gets the impression that fuel cell vehicles will be running about in town any time now. The reality is not that simple. It is true that the development pace of automakers is feverish. However, before fuel cell vehicles can outdo the cost, durability, and reliability of existing internal combustion engines, they must overcome many obstacles.

An engineer responsible for development planning comments, "It took more than 100 years for cars based on internal combustion engines to reach the current level of perfection. In that sense, the current FCHV is at the level where gasoline vehicles were around 1960. Of course, accomplishing in 10 years what took internal combustion engines 50 years has given us some confidence. The question is how long it will take us to catch up with and overtake the technology of the remaining 50 years. This is truly a challenge to the existing power sources."

Selecting the resource from which to extract hydrogen will also require technology development by fuel manufacturers, as well as enhanced cooperative structures. As for fuel supply infrastructures, a governmental agency has just begun a model experiment for hydrogen station technology. The establishment and standardization of regulations, as well as campaigns to increase public awareness about hydrogen are also essential.

Three kinds of automobiles —based on steam, electricity, and gasoline— began competing for dominance in the U.S. in the early part of the twentieth century. Gasoline vehicles satisfied three requirements, i.e., an infrastructure for easy fuel availability, ease of handling, and low cost, becoming the leader. The current fuel cell vehicles are inferior to the existing internal combustion engines in all three areas.

Due to the issues of cost, cruising range and infrastructure, initial applications will be limited. Broad acceptance of fuel cell vehicles will take ten to twenty more years.

Meanwhile, Toyota's work on fuel cell vehicles has also produced an unexpected benefit. The members of the development team for the existing power sources are more motivated because they do not want to lose to the FCHV. They are determined to improve the efficiency of existing vehicles so as not to easily yield the leadership position to the FCHV. Having these groups compete with each other and continue to work hard as rivals, has allowed Toyota to bring superior products to market. The FCHV has become an extremely effective trigger for internal revitalization.

Becoming a Pioneer of the Automobile Technologies of the 21st Century

In the future, society is expected to move toward achieving zero emissions by overcoming environmental and resource issues through energy diversification. Against this background, hydrogen's potential is attractive, and fuel cells will undoubtedly occupy an important position as a power source for automobiles.

"That is exactly why we must set a challenging goal and take the time to complete the development of FCHVs, which have the attractiveness of being better than existing power sources. Otherwise, our effort will be meaningless," stresses Senior Managing Director Hiroyuki Watanabe.

He reiterated his determination by saying, "In combining a fuel cell vehicle with hybrid technologies, we can create a system that behaves like a living organism, storing and consuming energy efficiently. In the natural world, there are many clever energy users from which we can learn a lot. The Demoiselle crane with a wingspan of only 50cm skillfully makes use of a jet stream to soar over the Himalayas to reach India for wintering. Monarch butterflies are known to traverse the North American continent. Even if we cannot match the wisdom in nature, we want to pioneer automobile technologies for the energy-diversified age by achieving an overall well to wheel efficiency that is at least 3 times better than gasoline vehicles and 1.5 times better than hybrid vehicles, while solving the various issues of the FCHV."

Monarch butterflies are known to traverse the North American continent

Consolidated Environmental Management

In FY2000, in order to reinforce its responses to environmental issues in all its business activities, Toyota introduced "consolidated environmental management" at all consolidated subsidiaries in Japan and overseas, major production companies, and overseas distributors. All companies jointly adopt the Toyota Earth Charter while at the same time drafting individual environmental policies and action plans. Toyota thus responds to environmental issues on a global scale by enhancing its environmental management system.

Companies Subject to Consolidated Environmental Management

Consolidated environmental management covers a total of 600[1] companies, as indicated below, including not only those which are subject to consolidated accounting, but also non-consolidated major production companies and overseas distributors that are large in size.

(1) 174 subsidiaries which are subject to consolidated accounting and under direct control of Toyota
(2) 31 major production companies and overseas distributors which are not subsidiaries subject to consolidated accounting
(3) 5 corporations[2] from other types of businesses,[3] that have close relationships with Toyota
(4) 390 subsidiaries of consolidated subsidiaries (sub-subsidiaries)

Environmental management at the companies in categories (1), (2) and (3) is promoted through the direct control of Toyota. With regard to the sub-subsidiaries in (4), the consolidated subsidiaries control each of the companies below them. Environmental management is promoted through collective reports made to Toyota.

Toyota's Requirements from Companies Subject to Consolidated Environmental Management

Toyota presents the requirements detailed in the table below to companies subject to consolidated environmental management and requests each company to create an environmental action plan based on the guidelines. Each company must complete establishment of an environmental management system by the end of 2005. The level of consolidated environmental management is quantitative management of environmental performance in the case of production companies and management of environmental action in the case of companies handling sales and other types of business.

1. As of the end of March 2002
2. 5 corporations: Four educational corporations (one university and three engineering colleges) and one co-operative society which also have a close relationship with Toyota are subject to consolidated environmental management as well because they have a certain level of environmental impact
3. Other types of businesses: Holding companies, controlling companies, design companies, motorsports related companies, non-automotive business companies

■ Toyota's Requirements from Companies Subject to Consolidated Environmental Management

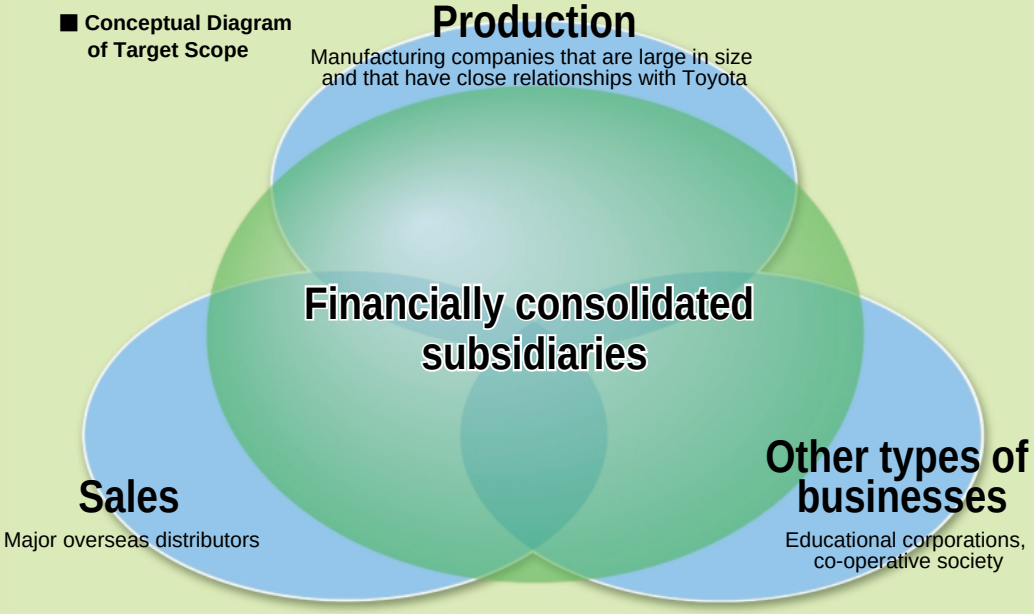
Production Companies

1. Jointly adopt the Toyota Earth Charter and draft individual environmental policies
2. Draft and promote an environmental action plan based on guidelines presented by Toyota for the reduction of CO_2 and substances of environmental concern, reduction of waste, conservation of water resources, etc.
3. Attain top level environmental responses based on actual conditions in each country and region

Sales and Other Types of Businesses

1. Jointly adopt the Toyota Earth Charter
2. Draft individual environmental policies
3. Create an environmental management system, reduce environmental impact and make social contributions in line with facilities at each company and nature of business
4. Attain top level environmental responses based on actual conditions in each country and region

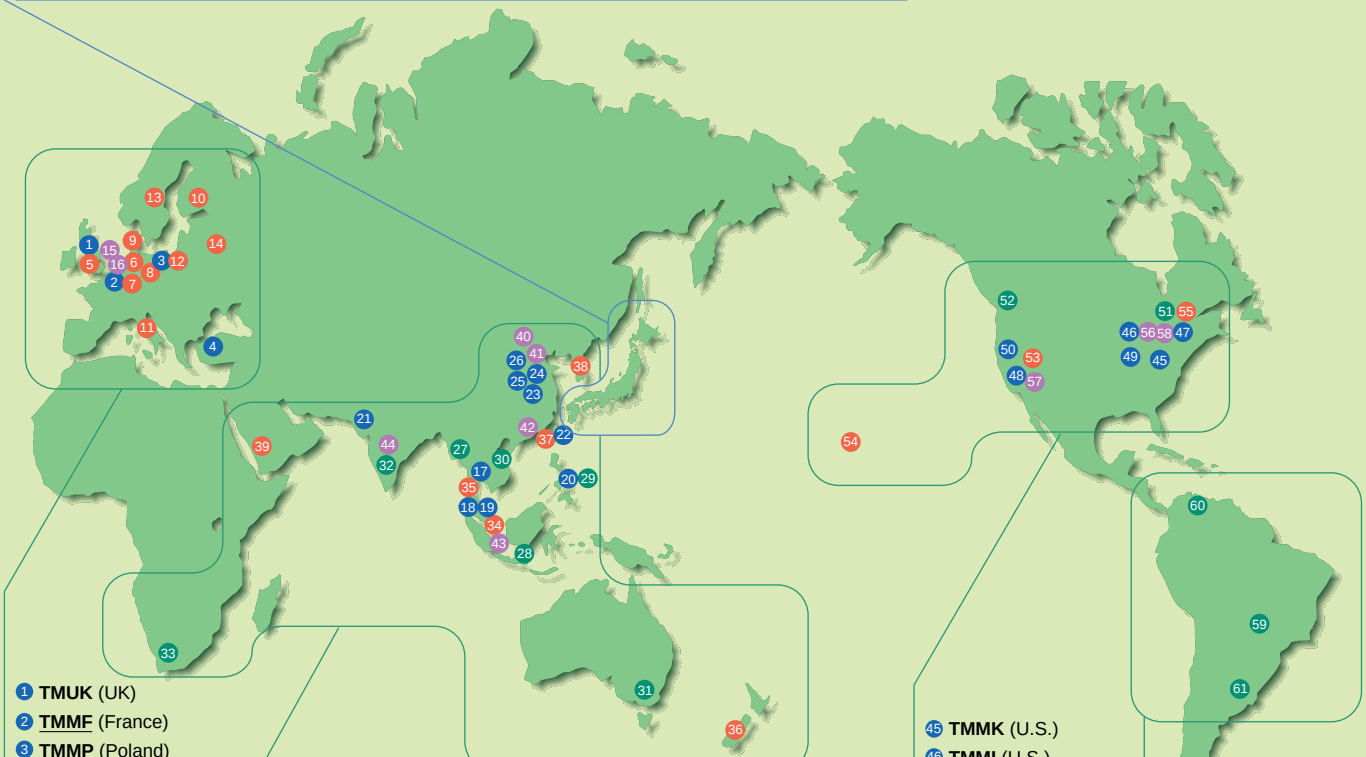
■ Conceptual Diagram of Target Scope



■ Main Companies Subject to Consolidated Environmental Management

< Japan >

Production companies				Sales companies	Other businesses
(Group 1)	(Group 2)	(Group 3)	(Group 4)		
Toyota Auto Body Co., Ltd.	Toyota Industries Corporation	Cataler Corporation	Admatechs Co., Ltd.	Tokyo Toyota Co., Ltd.	Toyota Technocraft Co.
Toyoda Boshoku Corporation	Aichi Steel Corporation	Kyoho Machine Works, Ltd.	FEC Chain Corporation	Toyota Tokyo Parts Distributor Co., Ltd.	Toyota Modellista International
Kanto Auto Works, Ltd.	Toyoda Machine Works, Ltd.	Chuo Precision Industrial Co., Ltd.	Shintec Hozumi Co., Ltd.	Toyota Rental & Leasing Tokyo Co.	Tacti Corporation
Hino Motors, Ltd.	Toyota Tsusho Corporation	Toyoda Iron Works Co., Ltd.	Tokai Container Co., Ltd.		Toyota Transportation
Daihatsu Motor Co., Ltd.	Aisin Seiki Co., Ltd.	Trinity Industrial Corporation	Toyota Turbine and Systems Inc.	Total of 44 companies	Aichi Rikuun Co.
Araco Corporation	Denso Corporation	Horie Metal Co., Ltd.	Toyota Macs, Inc.		Toyofuji Shipping Co., Ltd.
Central Motor Co., Ltd.	Toyoda Gosei Co., Ltd.	Yutaka Seimitsu Kogyo, Ltd.	Japan Chemical Industries Co., Ltd.		Toyota Enterprises Co., and others
Toyota Motor Kyushu, Inc.	Aisan Industry Co. Ltd.				Total of 66 companies
Toyota Motor Tohoku, Inc.	Aisin AW Co., Ltd.				
Toyota Motor Hokkaido, Inc.	Aisin AI Co., Ltd.				*Includes 5 companies that are financially non-consolidated
	Aisin Takaoka Co., Ltd.				
	Gifu Auto Body Industry Co., Ltd.				
	Tokai Rika Co., Ltd.				
- Consolidated subsidiaries - Automotive production companies - Toyota secondary companies	- Financially non-consolidated companies - Main parts manufacturers - Body manufacturers, etc.	- Consolidated subsidiaries - Automotive production companies - Parts manufacturers	- Consolidated subsidiaries - Automotive-non-related companies - All products production companies		
All-Toyota Production Environment Conference members * Toyota Central R&D Labs, Inc. joins as an observer		All-Toyota Production Environment Meeting members			



Europe

1 **TMUK** (UK)
2 **TMMF** (France)
3 **TMMP** (Poland)
4 **TMMT** (Turkey)
5 **TGB** (U.K.)
6 **TDG** (Germany)
7 **TFR** (France)
8 **TMCZ** (Czech)
9 **TDK** (Denmark)
10 **TFO** (Finland)
11 **TMI** (Italy)
12 **TMPL** (Poland)
13 **TSW** (Sweden)
14 **TMR** (Russia)
15 **TMME** (Belgium)
16 **TMEM** (Belgium)
etc.

Asia, Australia, Middle East and Africa

17 **STM** (Thailand)
18 ASSB (Malaysia)
19 **T&K** (Malaysia)
20 **TAP** (Philippines)
21 INDUS (Pakistan)
22 Kuozui (Taiwan)
23 TTMC (China)
24 TTME (China)
25 **TFAP** (China)
26 **TTFC** (China)
27 **TMT** (Thailand)
28 TAM (Thailand)
29 TMP (Philippines)
30 **TMV** (Vietnam)
31 **TMCA** (Australia)
32 **TKM** (India)
33 TSAM (South Africa)
34 BMS (Singapore)
35 UMWT (Malaysia)
36 **TNZ** (New Zealand)
37 Ho Tai (Taiwan)
38 **TMKR** (Korea)
39 ALJ (Saudi Arabia)
40 **TMCI** (China)
41 **TTCC** (China)
42 **TMCL** (China)
43 **TMAP** (Singapore)
44 **TTPI** (India)
etc.

North America

45 **TMMK** (U.S.)
46 **TMMI** (U.S.)
47 **TMMWV** (U.S.)
48 **TABC** (U.S.)
49 **Bodine** (U.S.)
50 NUMMI (U.S.)
51 **TMMC** (Canada)
52 **CAPTIN** (Canada)
53 **TMS** (U.S.)
54 SERVCO (U.S.)
55 TCI (Canada)
56 **TMMNA** (U.S.)
57 **TMA** (U.S.)
58 **TTC** (U.S.)
etc.

Latin America

59 **TDB** (Brazil)
60 **TDV** (Venezuela)
61 **TASA** (Argentina)
etc.

< Overseas >

● Production ● Production/Sales
● Sales ● Other types of businesses (manufacturing headquarters)

1. Companies indicated in bold are consolidated subsidiaries
2. Companies whose names are underlined indicate those that are subject to consolidated management from FY2002

Consolidated Environmental Management

FY2001 Action Policies and Results

In FY2001, the approximately 200 directly controlled companies subject to consolidated environmental management completed the drafting of individual environmental action plans.

Automotive-related production companies in Japan and overseas had drafted their plans by the end of FY2000 and began implementation in FY2001 in line with their own quantitative goals. Other manufacturing companies in Japan, overseas distributors, and companies from other types of business in Japan and overseas created individual plans in FY2001 and have begun initiatives based on the plan in FY2002.

470 Japanese dealers, regardless of whether they are subject to consolidated accounting or not, are all engaged in environmental action in accordance with the Toyota Japanese Dealer Environmental Guidelines.

This accounts for almost 100% of all Toyota vehicles produced and about 90% of vehicles sold.

■ **FY2001 Action Policies and Results of Activities**

	Action policy			Goal	Activity results
Production (63 companies)	Japan (37 companies)	Automotive-related production (30 companies)	- Promoting the achievement of FY2001 goals at each company - Enhanced structures for implementing actions	100% achievement rate	- All 30 companies took actions toward achieving the FY2001 goal (CO_2, waste, etc.) - Started the Environmental Information Network System[1] for gathering activity results at each company - Held conferences on action follow-up: All-Toyota Production Environment Conference, All-Toyota Production Environment Meeting
		Other manufacturing industries (7 companies)	- Development of Environmental Action Plans to match environmental impact at each company		- All 7 companies completed the development of Environmental Action Plans to match environmental impact at each company
	Overseas[2] (26 companies)	Automotive-related production (26 companies)	- Promoting the achievement of FY2001 goals at each company - Enhanced structures for implementing actions	100% achievement rate	- All companies took actions toward achieving the FY2001 goal (CO_2, waste, etc.) - Started the Environmental Information Network System[1] for gathering activity results at each company - Established the Regional Production Environmental Conference (Asia/Australia: Held in Thailand in March 2002) - Three new affiliates acquired ISO certification
Sales (70 companies)	Japan (44 companies)		- Promotion of individual action items based on the Toyota Japanese Dealer Environmental Guidelines issued in November 1999	Steady promotion	- Took actions in accordance with the Environmental Guidelines - Held Environmental Issue Information Exchange Meetings See p. 40 for details
	Overseas[2] (26 companies)		- Development of Environmental Action Plans based on the Overseas Distributors Environmental Guidelines issued in February 2001	Development of Environmental Action Plans	- All 26 companies completed drafting the environmental action plans according to the Overseas Distributors Environmental Guidelines
Other (64 companies)	Japan (51 companies)		- Development of Environmental Action Plans to match environmental impact at each company	Development of Environmental Action Plans	- All 51 companies completed the development of Environmental Action Plans to match the environmental impact at each industry
	Overseas (13 companies)				- All 13 companies completed the development of Environmental Action Plans to match the environmental impact at each industry

1. See p. 61 for details on the Environmental Information Network System
2. Eleven companies that are engaged in both production and sales are included in both categories

Establishment of EMS **Acquisition of ISO 14001 Certification**

Convinced that building an environmental management system based on ISO 14001 will help systemization and clarification of environmental preservation activities, and bring about full employee participation, Toyota has been actively encouraging companies subject to consolidated environmental management to also acquire this certification.

Of the 37 production companies in Japan subject to consolidated environmental management, 32 have already acquired ISO 14001 certification; with the certification in FY2001 of INDUS (Pakistan), TMMF (France), and TDV (Venezuela), 25 of the 26 overseas production companies have now acquired certification. Of the overseas distributors and other types of business, TGB (U.K.), TMME (Belgium), TCI (Canada) and TTPI (a company that manages the industrial area in India where Toyota suppliers are located) acquired certification in FY2001. Together with TMS (U.S.A.) and TSW (Sweden), six overseas affiliates are now ISO 14001 certified. Further, the Educational Foundation Toyota Tokyo Institute; Japan Automotive Engineering College has also acquired certification.

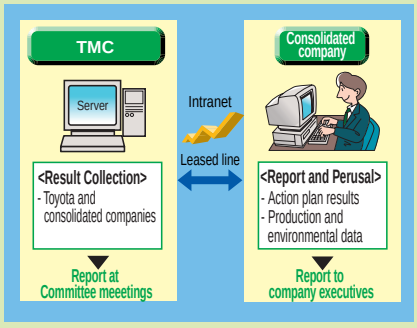
	Production companies	Sales and other
Japan	32 companies	11 companies[2]
Overseas	25 companies[1]	6 companies

1. Eleven of the production companies also have sales functions and the ISO expertise acquired in the production area will be expanded to the sales areas too
2. See p. 40 for details of ISO certified dealers in Japan, including subsidiaries not subject to consolidated accounting

Introduction of the Environmental Information Network System

Toyota began introducing an Environmental Information Network System in order to quickly summarize and evaluate environmental actions and promote performance improvements of production companies subject to consolidated environmental management and under direct quantitative control. Using this system, production companies subject to consolidated environmental management in Japan and overseas can not only make reports to Toyota by inputting internal environment-related data and information on non-compliance with regulations and regarding complaints; each company can also view the data of the other companies on-screen. In October 2001, procedural manuals were sent to overseas production companies as part of preparations towards making the system fully operational from FY2002. As of the end of June 2002, 60 companies, including production companies subject to consolidated environmental management and manufacturing headquarters have introduced the system and begun operation.

Motoki Hamasaki of the Environmental Affairs Division and Masashi Hiratsuka of the Plant Engineering Division confirm data that has been input



All-Toyota (Japan) Production Environment Conference/All-Toyota Production Environment Meeting

As a means of promoting reduced environmental impact from a top-down approach on an All-Toyota scale, Toyota organized the All-Toyota Production Environment Conference, participated in by 24 companies, and an All-Toyota Production Environment Meeting, participated in by 14 companies. Further, to assist the implementation of the 2005 Environmental Action Plans formulated by each company and follow up on the progress made, conferences of the secretariat comprising general manager class employees from each company were held eight times. Local training sessions were held as a means of raising activity standards through mutual research.

See p. 59 for individual company names

Meeting	Period	Agenda
All-Toyota Production Environment Conference	July 2001	• Recent environmental issues • Reporting of results of FY2000 activities (energy consumption, productivity increase, reduction of waste, etc.) • Approach for FY2001
All-Toyota Production Environment Meeting	December 2001	• Recent environmental trends • Interim report on progress with FY2001 activities • Report on 2005 Environmental Action Plans (7 non-automotive-related production

Initiation and Organization of Toyota Group Divisional Environmental General Managers Meetings

In 2001, the first Toyota Group Divisional Environmental General Managers Meeting was held, which brought together divisional environmental general managers from the various production companies to exchange information and opinions toward an enhancement of the environmental management system. Meetings were held three times in the fiscal year and addressed the themes listed in the table below.

The participants of the meeting consisted of the divisional environmental general managers from the 24 companies which constitute the All-Toyota Production Environment Conference. The meeting gives an opportunity three to four times a year for monitoring and adjusting the direction of environmental action of the Toyota Group and for introducing the latest environmental trends and the activities of each company.

Date of meeting	Theme
September 2001	Emission trading
October 2001	Trends in measures to prevent global warming
January 2002	Trends in implementation of the Automobile Recycling Law

First Overseas Regional Production Environment Conference

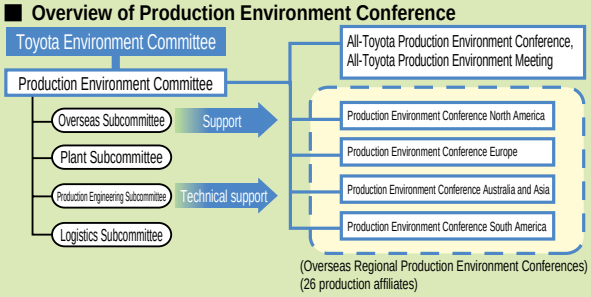
In March 2002, in order to enhance environmental management at overseas production companies, Regional Production Environment Conferences were initiated. The First Overseas Regional Production Environment Conference was held in Thailand.

Dividing the globe into four regions (North America, Europe, Asia/Australia and South America), a separate conference will be held in each region with the aim of raising standards and accelerating activity through mutual learning. The establishment of the regional conferences is seen as a way to complement the global activities of the Production Environment Committee.

Participating countries:
10 (from the Asia, Australia, Middle East and South Africa regions)
Participants: Around 50 persons in charge of environmental matters from 13 companies
Topics discussed
1. Status of progress with Toyota Consolidated Environmental Management
2. Activities at each company, specific examples of improvement
3. Environmental Information Network System
4. Activities to reduce environmental risk
5. Expansion of Environmental Purchasing Guidelines to Asia/Australia, Middle East and South Africa
6. Promotion of issuing of environmental reports, etc.

Senior Managing Director Yasuhito Yamauchi comments on reports made on the status of environmental action of each company, at the Overseas Regional Production Environment Conference

Overview of Production Environment Conference



(Overseas Regional Production Environment Conferences)
(26 production affiliates)

Items for Quantitative Control of Environmental Performance

(1) Prevention of global warming (reduction of energy consumption)
(2) Control and reduction of substances of environmental concern (reduction in VOC emissions and in volume of substances of environmental concern discharged)
(3) Waste reduction and resource conservation
(4) Water resource conservation

Global Expansion of Purchasing Guidelines

With regard to automotive-related production companies subject to consolidated environmental management in different countries, the "Environmental Purchasing Guidelines" (hereafter referred to as "Purchasing Guidelines"), a set of requirements requesting closer cooperation with suppliers, has been presented to the related suppliers.

In addition to common requirements from Toyota, the Purchasing Guidelines also include separate requirements for each country created in consideration of items requiring action because of the particular characteristics of the relevant country or region. The table on the right shows the state of implementation up to FY2001.

■ **Region and Status of Implementation of Purchasing Guidelines**

Region	TMC's uniform requests: Timing	TMC's uniform requests: Issuing company	ISO 14001 certification	Control and reporting of substances of environmental concern: Raw Materials and Secondary Raw Materials Used in Production Processes	Control and reporting of substances of environmental concern: Parts	Material information related to recycling	Number of supplies targeted (primary)
Japan	March 1999	TMC	○ (By 2003)	○	○		Approx. 450
North America	August 2000	TMMNA	○ (By 2003)	○			Approx. 320
Europe	April 2001	TMEM TMME	○ (By 2003)	○	○	○	Approx. 300
Countries and regions other than those listed above (preparation underway for issuance)	FY2002	Various companies (16)	○ (By 2005)	○			Approx. 1,500

*Specific requirements for North American and European companies include "safe transport and storage of products" and those for European companies include "management of packaging material" (reduction of curing waste)

Overseas Distributors Draft Environmental Action Plans

Drafting of Environmental Action Plans, based on the Overseas Distributor Environmental Guidelines, was completed by all 26 companies within FY2001. Toyota presented the following requirements to companies with regard to drafting of the plans:

1. Jointly adopt the Toyota Earth Charter
2. Draft individual environmental policies
3. Draft and steadily implement the 2005 Action Plan

Specific requirements included:

- Drafting of environmental management systems including follow-up strategies such as internal environmental committees
- Reduction of environmental impact caused by vehicle distribution centers, parts centers, etc.
- Guidance and support for dealers through issuing of environmental guidelines, etc.
- Integration of environmental issues in public relations and social contribution activities

■ **Examples of Environmental Action Plans from Various Companies**

Country and affiliate	Content of action plan
Taiwan (Ho Tai Motor Co., Ltd.)	1. Construction of an environmental management system 2. Enhance efficiency of logistics at parts distribution centers 3. Appropriate disposal of industrial waste and reduction of waste generated 4. Strict compliance with regulations concerning air, water and noise pollution
Vietnam (Toyota Motor Vietnam Co., Ltd.)	1. Appropriate disposal of substances of environmental concern (waste oil, oil filters, tires, batteries, solvents, and others) 2. Issuing of environmental guidelines to dealers 3. Promotion of the use of air conditioning refrigerant collecting and recovering equipment by dealers 4. Employee environmental awareness promotion activities

Environmental Compliance Conference Held in the U.S.

The first TMS Environmental Compliance Conference was held in February 2002 in Torrance, California.

Environmental officers from each Toyota Motor Sales (TMS), USA, Inc. site, as well as from Toyota Canada, Inc. (TCI), Toyota Technical Center (TTC) and other North American affiliates, representatives from the California Environmental Protection Agency, the U.S. Department of Transportation, the Federal Aviation Administration, and the U.S. Coast Guard, attended the conference for a total participation of over 100. A range of lectures was given and case studies and exchanges of opinion conducted in order to improve the environmental legislation compliance skills of environmental officers.

Further, addresses were also given by the top management of TMS, in which senior executives took the initiative in stressing the importance of the environment.

Participants conducting case studies in groups

European Environmental Meeting

The annual European Environmental Meeting was held in Brussels, Belgium in April 2002. The meeting was attended by about 50 persons from distributors in 19 European countries and from Toyota Motor Europe Marketing & Engineering S.A. (TMME) and TMC.

They exchanged opinions and held discussions on the following topics:

1. End-of-life vehicles (ELVs)
2. Environmental communication
3. Consolidated environmental management system
4. Environmental training and education
5. Compliance with environmental regulations

Introduction of Clean-energy Vehicles in Overseas Markets

The hybrid car Prius was launched in Japan in December 1997, in North America and Europe in 2000, and in Australia, Hong Kong and Singapore in 2001. As of the end of March 2002, it was on sale in more than 20 countries around the world and cumulative worldwide sales had reached approximately 90,000 units. In the U.S., where new methods have been tried such as direct communication with customers through development of an online ordering system, 27,000 units have been sold so far. In Europe, 3,250 units have been sold, mainly in the U.K., Germany, the Netherlands, Sweden and Switzerland.

In FY2001, the Corolla and the Matrix were newly released in the U.S. as ULEV (Ultra Low Emission Vehicle) compliant vehicles, while in Europe sales began of the SC430, the Corolla, and the Corolla Verso as Step 4 compliant vehicles.

Introduction of the Prius in Singapore

U.S. Environmental Seminar

In December 2001 in Sacramento, California, government representatives, environmental NGOs, the media and others were invited to participate in the U.S. Environmental Seminar. Senior Managing Director Hiroyuki Watanabe and TMA President Toshiaki Taguchi gave talks on approaches to environmental actions and the environmental technology development scenario.

Environmental Corporate Advertisements in Southeast Asia

In order to promote understanding of Toyota's environmental responses, environmental corporate advertisements were placed as detailed in the table below. According to a survey carried out subsequently, Toyota was rated as being "strongly committed to environmental response" and as "producing low-emission and highly fuel-efficient vehicles."

■ **Advertisements on Themes from Individual Countries throughout Southeast Asia**

Region	Theme
Pan-Southeast Asia	Prius, hybrid system
Thailand	Common rail diesel engine
Indonesia	ISO 14001 certification
Malaysia	"Toyota Eco Youth" program
Philippines	"Save the Earth, Plant A Tree" program
Vietnam	Projects selected for "Toyota Environmental Activities Grant Program" in commemoration of Global 500 Award
Singapore/Hong Kong	Prius introduction

Pan-Southeast Asia corporate advertisement

As a country-by-country topic, we present the example of the "Toyota Eco Youth" program in Malaysia.

Sponsor	UMWT (with support from the Malaysian Ministry of Education)
Date	July – October, 2001
Outline	Eight secondary schools participated to create environmental programs for waste management, electricity conservation, etc. at each school. As part of the process, UMWT provided training and practical instruction, as well as recognizing schools which achieved excellent results.

Students from the school chosen as the winner of "Toyota Eco Youth 2001"

Based on one of the action guidelines of the Toyota Earth Charter, jointly adopted by all companies subject to consolidated environmental management - "Toward better understanding..... actively disclose information and promote environmental awareness" - each company takes a proactive stance in promoting the issuing of environmental reports and other activities.

In Japan, 17 automotive-related production companies have now published environmental reports (two of them available on the Web only). Of the other types of businesses, Toyota Consumers' Co-operative Society has issued an environmental report.

Toward more global information disclosure, Toyota is also promoting the publication of environmental reports by overseas affiliates. In FY2001, environmental reports were issued by overseas affiliates in three regions, Europe, North America, and Australia.

Environmental reports issued by three regions overseas
(Australia, Europe and North America)

■ **Environmental Reports Published by Overseas Affiliates**

Region	Date of publication	Main features/URL
Europe (TMME, TMEM)	November 2001	Includes the areas of products, production, sales and recycling, and introduces some distributors and manufacturing companies in Europe — http://www.toyota-europe.com
North America (TMA)	December 2001	Comprehensive report on products, production, sales and recycling with the focus on the U.S. — http://www.toyota.com/environment
Canada (TCI)	February 2002	Information exclusive to Canada has been added to North America's Environmental Report — http://www.toyota.ca (Web only)
Australia (TMCA)	March 2002	Report generally covers production, products, sales, and social contributions — http://www.toyota.com.au/

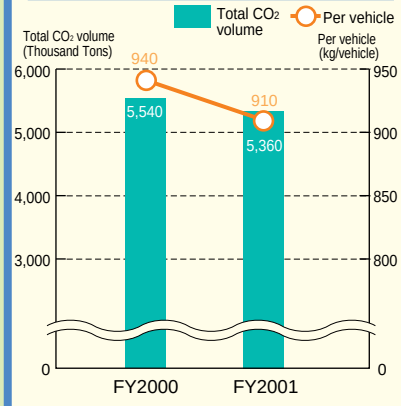
Global Environmental Data

In order to understand its environmental impact on a global scale, Toyota collected data on CO_2 emissions, volume of waste generated* and water consumption at production companies in Japan and overseas, subject to consolidated environmental management, for FY2001 (April 2001 - March 2002), and has started disclosure. In the future, Toyota will engage in consolidated environmental management toward reducing CO_2 emissions, waste, and water consumption worldwide.

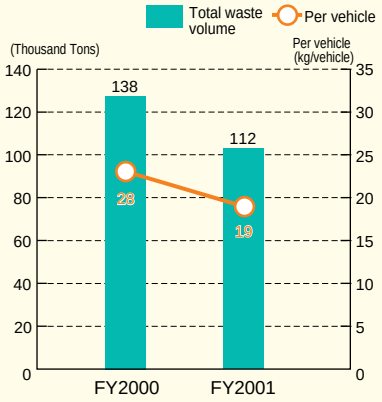
Worldwide

(55 companies)

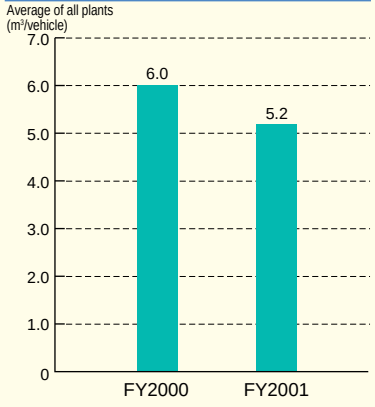
CO_2 Emissions Volume



Volume of Waste Generated

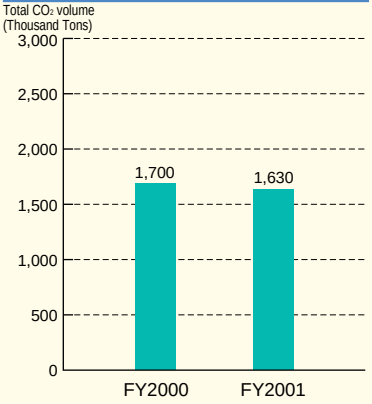


Water Consumption (Vehicle Assembly Plants)

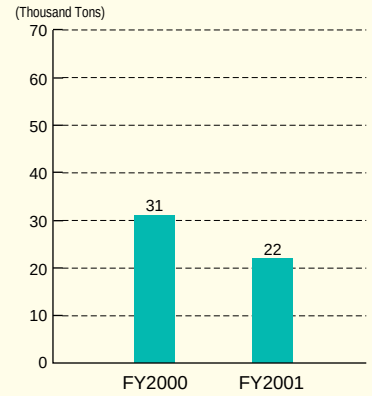


Toyota Motor Corporation

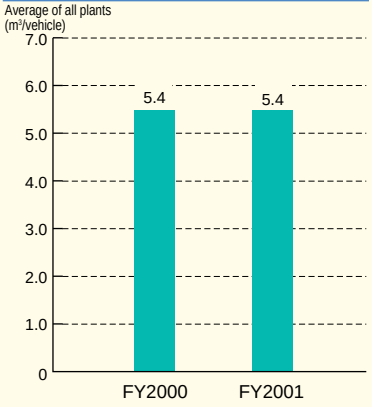
CO_2 Emissions Volume



Volume of Waste Generated



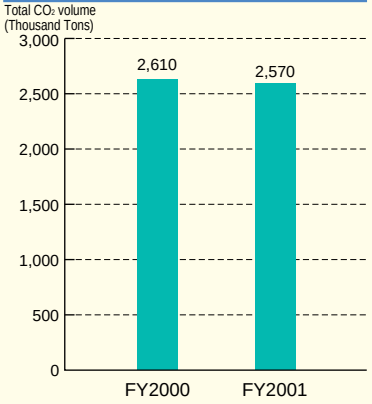
Water Consumption (Vehicle Assembly Plants)



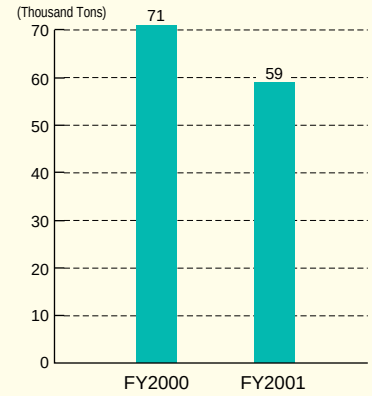
Japan

(29 companies)[2]

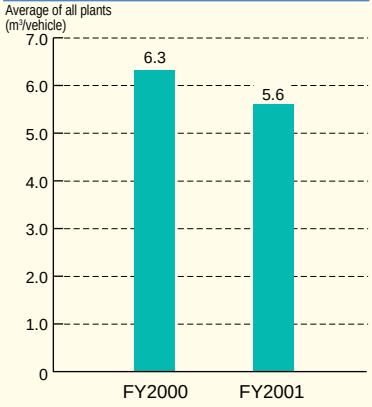
CO_2 Emissions Volume



Volume of Waste Generated



Water Consumption (Vehicle Assembly Plants)

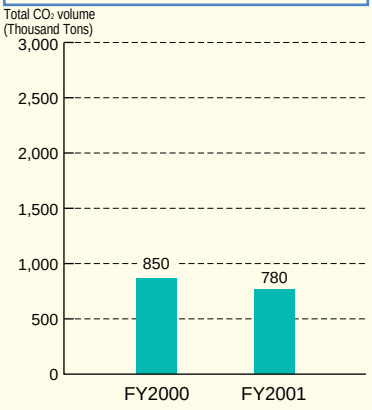


1. Volume recycled is not included
2. These 29 companies are companies in Groups 1, 2 and 3 in the “Main Companies Subject to Consolidated Environmental Management” on p. 59. However, Trinity Industrial Corporation in Group 3 is not included in the data above because it has been included under consolidated accounting from FY2002.

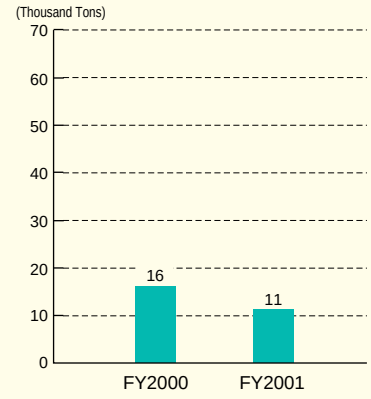
North America

(8 companies)

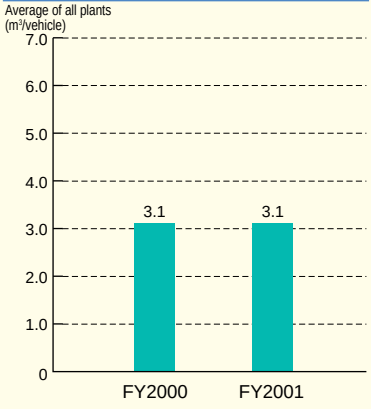
CO_2 Emissions Volume



Volume of Waste Generated



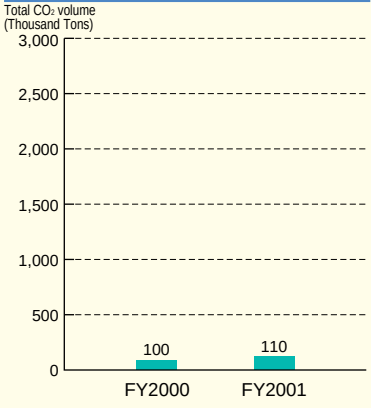
Water Consumption (Vehicle Assembly Plants)



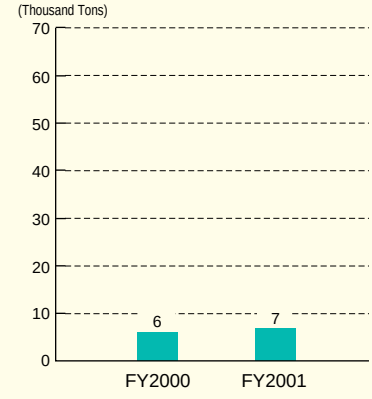
Europe

(1 company)

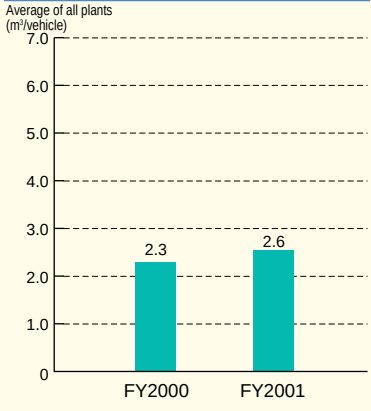
CO_2 Emissions Volume



Volume of Waste Generated



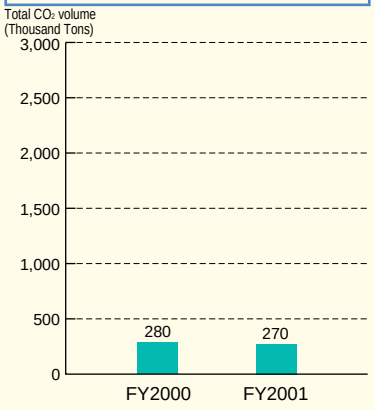
Water Consumption (Vehicle Assembly Plants)



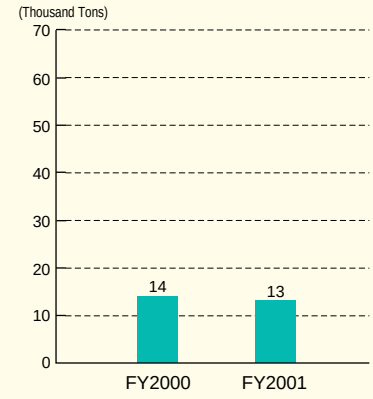
Asia, Australia, Middle East, South Africa and South America

(16 companies)

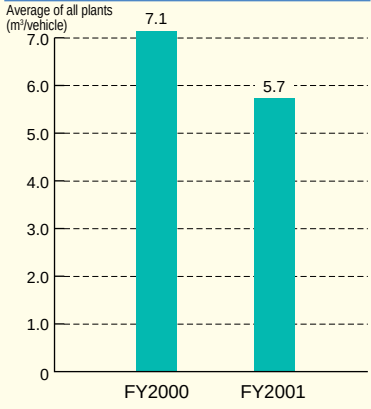
CO_2 Emission Volume



Volume of Waste Generated



Water Consumption (Vehicle Assembly Plants)



*The data of production companies in China, TMMF and TMMP are not included above because they were in the operation startup stage or preparation stage in FY2001. Their data will be subject to consolidated accounting after FY2002.
*The data of TMMT is not included above because of major changes in production caused by the economic situation
*For CO_2 emissions volumes overseas, the Japanese indicators are referenced and calculations are made from energy consumption volumes (CO_2 [Tons] = energy [GJ] x 0.0767)

Example of Environmental Initiatives

Toyota Auto Body Co., Ltd.

Achievement of Zero Landfill Waste and Further Efforts toward Zero Emissions

Fujimatsu Plant (Head Office), Kariya City, Aichi Prefecture

Toyota Auto Body Co., Ltd., was established in August 1945 and is based in Kariya City, Aichi Prefecture. As the core body manufacturer of the Toyota Group, the company is engaged in development and manufacturing of products that anticipate the needs of the times under the motto "Research and Innovation." At present, the company employs 8,000 people at its three plants in Fujimatsu (Head Office), Kariya and Inabe (Inabe-gun, Mie Prefecture), producing 470,000 vehicle bodies a year, chiefly minivans.

Action towards Environmental Preservation

In October 2000, based on the principle of producing vehicles with little environmental impact, Toyota Auto Body drafted the Third Toyota Auto Body Environmental Action Plan, defining its environmental actions up to FY2005, which are now being implemented. The implementation system is based on an Environmental Committee chaired by the President, under which are separate specialist subcommittees for each of the product, production and environmental awareness areas. The system promotes activities leading to practical results. Meanwhile, separate committees for each plant combine the roles of deliberating on concrete activities and managing their progress.

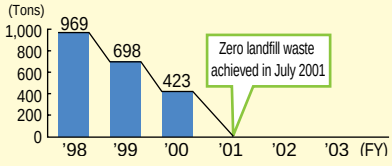
Reducing Waste and Achieving Zero Emissions

Initiatives to reduce waste is one of the key areas of the action plan which looks ahead to the year 2005 and is being promoted through concerted action across the whole company.

Action to achieve zero landfill waste* was begun in FY1999, and reached its goal in January 2001 at the Fujimatsu Plant, which acted as the model plant. Through expansion of this action, the target for company-wide achievement of the same goal, which was originally set for the end of FY2003, was brought forward substantially so that zero landfill waste was achieved on a company-wide basis in July 2001.

*Zero landfill waste:
A reduction in landfill waste of 95% or more of the FY1998 level

■ **Trend in Volume of Landfill Waste**



Waste Reduction Activities in the Development Stage

Working jointly with Toyota at the vehicle development stage, Toyota Auto Body is progressing with the introduction of welding for resin parts (elimination of mounting screws) and the integration of resin materials (standardization of materials) with the aim of improving the recoverability of end-of-life vehicles. In addition, towards development and design with consideration to reduction of waste in the production process, Toyota Auto Body is progressing with technology development to expand the use of recyclable materials, for instance using the scrap material generated during the resin molding process to make the air conditioner ducts of the instrument panel and other parts.

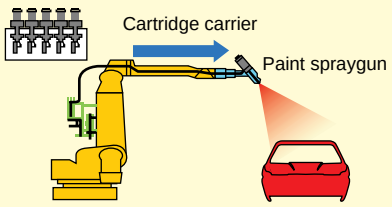
Meanwhile, use of black out tape to replace black out paint (application) for exterior design has been extended from the year 2000 Estima, where the technology was first perfected, to the Noah/Voxy models launched in 2001, rendering unnecessary the use of masking paper, which had to be discarded after use on a single vehicle, realizing further reduction in waste.

Reducing Waste at the Source

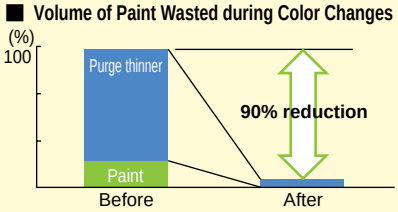
With the aim of reducing waste generated at the source, Toyota Auto Body is engaged in designing production processes at the production preparatory stage which generate no or reduced levels of waste.

In the painting process for the Noah/Voxy, use of a cartridge method that reduces loss of paint during color changes (90% reduction in paint loss) and also reduces purge thinner usage, was expanded. Paint robots equipped with a rotary atomizing electrostatic coating machine for a high level of paint transfer efficiency were conventionally used only for the exterior paneling. Their use was extended to include the interior paneling painting process as well. These and other major improvements have allowed for a 70% reduction in paint loss levels across the painting process as a whole.

■ **Adoption of Cartridge System**



■ **Volume of Paint Wasted during Color Changes**



Thorough Sorting at the Production Process

In the production process, a survey was undertaken of landfill waste according to categories, generation sources and volume generated. Toyota Auto Body has been promoting the reuse of parts caps by suppliers, recycling of used aluminum foil into raw material for aluminum, recycling of waste plastics as raw material for iron-making blast furnaces and other measures. As a result, the FY1998 company-wide total of 969 tons of landfill waste of 31 categories has been condensed into 17 categories differentiated by recycling use. Zero landfill waste has thus been achieved through thorough sorting procedures based on high levels of awareness among all employees not only in the Production Group but also in the Administration Group.

Sorting and collection at the Recycling Center

Taking on the Challenge of Making Further Efforts for Zero Emission

Now that zero landfill waste has been achieved, Toyota Auto Body is promoting further waste reduction and action to achieve zero waste with a new target set of "reducing combustible waste to 1/3 or less of FY1990 levels by FY2005."

In addition, Toyota Auto Body's consolidated production subsidiaries are working toward the achievement of zero landfill waste in FY2003.

TMMF (France)

Europe's Newest Plant Aims for Green, Clean and Lean Production

The French Plant (Valenciennes, Nord Prefecture)

Toyota Motor Manufacturing France S.A.S. (TMMF) was established in 1998 (wholly owned by TMC) as Toyota's second European manufacturing base and production began in January 2001. Valenciennes, in Nord Prefecture, where the plant is located, was already known as a coal and steel town. It shares a border with Belgium and is also close to TMUK in the United Kingdom. Currently, approximately 2,100 employees are producing 150,000 units of the Yaris (known as the Vitz in Japan) annually.

Adoption of the Toyota Production System for Environmental Improvement and Increased Consciousness

The fundamental philosophy of the Valenciennes Plant — "Green, Clean and Lean Factory 21" — seeks to eliminate *muda, muri and mura* (waste, over-burden, and irregularity) by adopting the Toyota Production System, which promotes cost reductions while building in quality, thereby reducing environmental impact. In pursuit of this goal, in 1998 Toyota conducted a survey of environmental responses at its competitors' European plants, aimed at reductions in energy usage, emission of VOCs, water consumption, and waste.

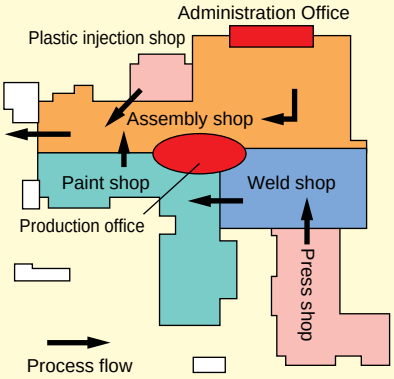
The Yaris production line

Innovations to the Production Line Reduces Energy Consumption by 30%

The plant layout is designed to enhance operating efficiency, and part conveyance between processes and from supplier to production lines were improved. The plant floor area and the length of production lines were reduced by 30% compared to earlier lines. As a result, lighting and conveyance energy consumption was cut by about 30%.

Energy reduction measures have been adopted in various processes. These include: introduction of electric servo welding machines to optimize energy levels in place of the earlier air cylinder type operated on pressurized air; increased use of highly productive presses that can create multiple parts at one time in place of presses that can create only one part at a time; and a reduction in the size of the painting line.

■ **Saving Energy through a High-Efficiency Layout**



Raising Environmental Awareness through ISO Certification Activities

Employees were trained and educated to incorporate PDCA activities into the environmental management system from the very beginning. In October 2001, specific activities were launched in order to acquire the ISO 14001 certification in six months. This helped to raise employees' awareness on environment matters, as is reflected in the following comments by worksite environmental leaders: "the goals were very ambitious, but we learned that the activities designed for acquiring ISO certification lead directly to conservation of raw materials, energy, and water as well as improvements in productivity and competitiveness," "as a result of the activities, our responses to defects have become more sensitive," and "it was a good opportunity to enhance our understanding of the worksite and products." In March 2002, the plant obtained the ISO 14001 certification as planned.

The newsletter "T.M.M. Flash" promotes ISO certification activities

Zero Landfill Waste Achieved from Start of Production

Results of activities in FY2001 show that the ultimate goal of "zero landfill waste" was achieved right from the start of production. Reductions in energy consumption, water usage, and VOC emissions are also being steadily promoted as per schedule. It is expected that the final goal of reaching Europe's best levels in all three areas will be achieved in 2003, when the plant will be fully operational.

Specific activities that were implemented to reduce waste include reduction of packaging materials and use of returnable containers, reuse of plastic waste generated at the plant, and promoting the recycling of waste. In addition, the elimination of the wet sanding process and the reuse of general processed waste water as coolant resulted in reductions in water usage.

The use of water-based paints, introduction of a new painting system and recycling of rinsing solvents, together with the expanded use of water-based paints in the surfacer process have enabled the plant to achieve even higher levels of reduction in VOC emissions.

Aiming to Further Improve Performance

President Toshiharu Takasu believes that "the acquisition of ISO 14001 certification just 15 months after the start of operation is the result of initial planning, accumulated knowledge and the cooperation of our suppliers and employees. I hear comments from people visiting the plant such as "the plant is so clean" and "I was impressed by the strict sorting of the waste." Even so, the acquisition of ISO certification is just the first step towards further improvements in our environmental performance." He reiterates his determination to "raise the level of our activities even further in the future and to firmly establish environmental preservation structures and an environmental management system."

URL http://www.toyota.fr/b/b01.html

Example of Environmental Initiatives

TMCA (Australia)

Promotion of Environmental Initiatives as a "Good Corporate Citizen"

Altona Plant, Australia

Toyota Motor Corporation Australia Limited, (TMCA), wholly owned by TMC, began producing and selling Toyota vehicles in 1963. The company's Head Office, Engineering, Procurement and Manufacturing operations are located in Melbourne, and Marketing activities are based in Sydney. TMCA employs around 4,200 people and produces around 95,000 units of the Camry and Avalon each year. Annual sales, including vehicles imported from Japan, total 162,000 units.

Environmental Affairs Project

In 2001, TMCA drafted its Environmental Action Plan up to 2005, and established a key project of "Environmental Affairs."

An agreement was reached with "The Natural Step," an environmental NGO, to develop an educational program for employees, who form the core of this project. To increase employee environmental awareness and understanding, a brochure entitled "Why the Environment is Important" was issued to all employees.

Promotion of Environmental Management

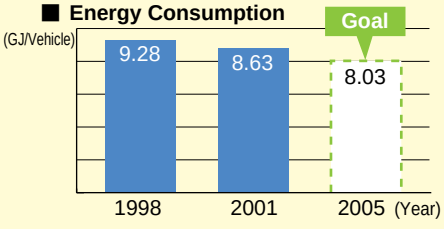
In 1999 TMCA's Altona and Port Melbourne plants acquired ISO 14001 certification. Initiatives are now favorably underway to achieve 2005 goals.

Additionally, TMCA encourages all 98 Tier 1 suppliers to be ISO 14001 certified. At the end of 2001, more than 30% had attained that goal.

Initiatives to Reduce Environmental Impact

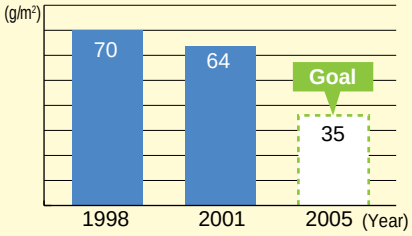
Regarding reduction of CO_2 emissions, improved equipment control and operating efficiency have reduced energy consumption by 6% in 2001 as compared to 1998.

■ Energy Consumption



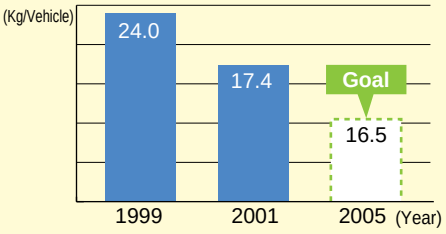
Efficient use of solvents in the paint shop has brought about a reduction in VOC (Volatile Organic Compounds) emissions.

■ VOC



Many projects in cooperation with suppliers, aimed at reducing landfill waste have resulted in 94% of waste being recycled. Specific efforts include adoption of the use of returnable containers for packaging and wrapping material by 95% of regional suppliers.

■ Landfill Waste



However, 1,620 tons of cardboard, wood and plastic are still generated each year as packaging waste. Proper sorting and recycling are being promoted as further efforts to reduce waste.

Water consumption per vehicle was reduced by 13% as compared to 2000, through measures such as reducing usage of pretreatment rinse water and wet sanding water in the paint shop.

Environmental Management at Dealers

225 independently owned dealers, under contract with TMCA, form the frontline of public perceptions about Toyota. To assist in raising environmental awareness among dealers, the "Environmental Guidelines for Dealers" was issued to all dealers in October 2001, and responsible environmental management is being encouraged.

As part of these activities, dealers, TMCA employees and local communities participated in a tree-planting program.

Australia-wide National Tree Day
More than 1 million trees were planted

Community Spirit

During 2001, TMCA developed a new strategy called the "Toyota Community Spirit" representing the action policy of a good corporate citizen. TMCA is promoting community activities through involvement in local municipality tree planting programs, support for Carbon Awareness Day through the Foster Foundation, and others.

Also, in order to further improve good relations with the local community at the Altona Plant, TMCA established the Altona Environment Community Liaison Committee. This committee will work towards improving local residents' understanding of TMCA's approach to the environment.

TMCA published its first Environmental Report in March 2002. This report aims to improve information disclosure and will be published annually.

URL http://www.toyota.com.au/

Example of Environmental Initiatives

TCI (Canada)

Promotion of Environmental Preservation through Cooperation with the Community and NPOs

Toyota Canada Inc. (Scarborough)

At Toyota Canada Inc. (TCI), a joint venture company whose investment is shared fifty-fifty by TMC and Mitsui & Co. Ltd., all employees are committed to protecting the local and global environment. This is also being encouraged at the more that 250 Toyota and Lexus Dealers throughout the country. TCI's broad range of environmental initiatives includes programs designed to help the company lessen its impact on the environment, and activities to protect and preserve the communities in which TCI's employees live and work.

Prius: Environmental Ambassador

TCI has used the gasoline-electric hybrid Prius in several projects to raise interest in vehicles with low environmental impact.

As part of these efforts, TCI became an official "Green Partner" by providing several of the Prius vehicles to the government organizers of the G8 Summit held in June 2002 at Kananaskis, Alberta.

In 2000, TCI joined forces with the Car Heaven organization in a three-year initiative to encourage consumers to take older vehicles, which have a larger impact on the atmosphere, off the road. TCI donated a Prius, which was won by a program participant. As of December 2001, over 4,500 older vehicles had been permanently taken off the road to be dismantled and properly recycled.

*Car Heaven:
A Canadian NPO that promotes taking older vehicles off the road in order to lessen air pollution

TCI Chairman Yoshio Nakatani presenting the Prius

Promoting Acquisition of ISO 14001 Certification and Recycling

TCI's Head Office in Toronto, Ontario, achieved ISO 14001 certification in November 2001. Programs are currently underway to expand the ISO initiative to all TCI-related facilities across Canada. In this process, TCI conducts regular environmental audits, reviews any findings and develops corrective action plans.

Already, TCI reuses and recycles packaging materials, and recycling programs developed at TCI's Head Office and the Parts and Vehicle Distribution Centres recover metal, cardboard, wooden pallets, plastics, white paper, toner cartridges and alkaline batteries.

TCI has established a nation-wide program to recover lead acid batteries from Dealers. Furthermore, TCI plans to introduce a program to recover Ni-MH batteries, etc. used in the Prius, and is promoting the introduction of programs for the recovery of other materials. To promote environmental awareness within the company, TCI employees are helping to plant gardens to reduce lawn watering and maintenance, and naturalize the surrounding environment.

Co-operating with the Greening of Elementary Schools

In 2000, TCI pledged CAN$1.8 million over three years to establish the Toyota Evergreen Learning Grounds program. This nation-wide initiative transforms concrete school grounds into natural outdoor classrooms. During 2002, CAN$100,000 in grants was distributed to help 87 schools purchase plants for their schools' playgrounds. Opportunities for Dealers to participate in this program are increasing as more schools in their market area conduct planting events.

The Toyota Evergreen Learning Grounds program....."Bring Nature to Your Child's School"

Support for Earth Day Events

TCI is a major sponsor of Earth Day Canada (EDC), a prominent national environmental communications organization. TCI helped plan two major Earth Day events in 2002: a tree planting festival in Toronto, and a street clean-up in Montreal.

Supporting Earth Day clean-up events

Protecting the Local City Environment of Scarborough

For the past two years, TCI employees have set aside one day in June to involve themselves in environmental preservation activities. For example, a former dump site is being rehabilitated by The Friends of the Rouge Watershed (FRW), a community-based conservation group in Scarborough. TCI has also contributed CAN$70,000 and a T100 4X4 pickup truck to FRW, enabling the group to plant thousands of trees and wild flowers in the watershed area.


TCI employees planting flowers

TCI published the Canadian version of the North American Environmental Report (NAER) in February 2002. This report is available online at

URL http://www.toyota.ca

Example of Environmental Initiatives

Educational Foundation Toyota Tokyo Institute

Japan Automotive Engineering College

Environmental Efforts Based on United Action by Teaching Staff and Students

The Educational Foundation Toyota Tokyo Institute; Japan Automotive Engineering College (JAEC), located in Hachioji City, was established in 1954 through endowment from Toyota. To date, the college has turned out more than 16,000 graduates, over 90% of who are employed at Toyota-affiliated dealers. Over 50% of the technicians at Toyota-affiliated dealers are graduates of JAEC, the Educational Foundation Toyota Nagoya Institute; Chubu Automotive Engineering College, or the Educational Foundation Toyota Kobe Institute; Kansai Automotive Engineering College.

Activities to Reduce Environmental Impact in Coordination with Toyota Dealers

JAEC started to place full emphasis on environmental activities in line with the Toyota Japanese Dealer Environmental Guidelines created in 1999, on the basis of the consideration that reinforced action was required as an institution responsible for the training of mechanics. An Environmental Preservation Committee was established and activities such as the operation of manifests were begun, directed toward the reduction of environmental impact in accordance with servicing divisions at dealers.

Proactive prevention measures being implemented at the storage area for waste oil, waste LLCs and waste elements

Action at the Source Human Resource Training

JAEC is equipped with facilities of the same standard as those of the servicing divisions of dealers and handles waste oil, LLCs, batteries, and CFCs during practical training. The teaching staff provides instruction in methods of handling and disposal through practical guidance. With regard to it's original mission -education- the college has now begun environmental education on the basis that "to deepen understanding of environmental preservation and resource conservation and have these practiced in the student's life is not merely of educational significance but also constitutes a part of environmental actions taken by Toyota at the source, in the form of training of human resources."

Meanwhile, environmental preservation measures have been included as an essential part of the Grade 1 Automobile Service Techniques Qualification Test introduced by the Ministry of Land, Infrastructure and Transport in FY2002. Introduction of corresponding curricular measures (1st Class Service Engineer Course) are being promoted.

Students Involved in the ISO 14001 Certification Process

In the autumn of 2001, JAEC held an explanation meeting to brief the 1,100 students and teaching staff on the significance, content, procedures and rules of the ISO 14001 certification process. There were concerns that involving students in the process would make acquisition difficult, but once activities had begun the students displayed an interest and enthusiasm in their activities which surprised even their teachers.

At the Campus Festival held soon after, fuel-cell models, experimental models of electric vehicles produced through self-guided research, and other items were featured under the theme of the Environment. Another instance of the involvement and awareness among the students was evidenced at the student dormitory. The wording of the signs on the bins containing sorted waste was changed, at the proposal of the students, from "Burnable Waste" and "Non-burnable Waste" to "Waste OK to Burn" and "Waste Not OK to Burn." Other activities included environmental management of the dormitory based on the PDCA (Plan, Do, Check, Act) cycle, participation in local beautification activities, and recording of environmental activities by group leaders. In March 2002, JAEC acquired ISO 14001 certification.

A student responds to questions from an ISO auditor

Students participate voluntarily in beautification activities of the local community

College principal Shiino commented: "ISO certification was a good opportunity not only to review environmental management, but the management of the school itself. I was impressed by the students' sensitivity to environmental matters and their uncompromising spirit. I am proud to be able to send such fine young people out into the front line of environmental action surrounding automobiles. In the future we will aspire to achieve a level of human resource training which will enable graduates of the 1st Class Service Engineer Course to work as environmental auditors at dealers."

ISO 14001 Certification Ceremony

Continued Reporting

Due to editorial policy or space limitations, some features included in the Environmental Report 2001 could not be included in this year's report.
In the interest of continued reporting, major developments in these areas are reported below.

Area	Details	Page no. in the 2001 report	Current status
Development and Design	Improvement of Environmental Management System (EMS)	22	Enhanced management through implementing improvements such as clarification of the procedure related to external communication.
Procurement and Production	Use of IT in the Environmental Management System	30	Promoting IT system operation in the construction of EMS in the Production Engineering Group.
	Eco Research Co., Ltd. for supporting PRTR	30	Providing PRTR-related services to approximately 360 members as of June 2002. See p. 30 of Environmental Report 2001 for details on Eco Research Co., Ltd.
Other Businesses/ Sales/ After Sales	Environmental actions at the L&F (Logistics & Forklift) business and L&F dealers	52 62	The L&F Business was transferred to Toyota Industries Corporation, in FY2001. For progress information, please refer to the environmental report issued by the company or visit its Web site at: http://www.toyota-shokki.co.jp

Changes in definitions and indices

- In earlier reports, waste was defined as the total volume disposed of through intermediate steps, such as incineration, and the volume disposed of in landfills. However, in the current report, the definition of the volume of waste generated has been changed to the combined total volume of landfill waste, incineration waste, and materials recycled for fees and for free. See p. 28.
- For the index indicating lead usage in vehicles, earlier reports used the figure for the vehicle with the largest lead usage among all vehicles sold. In contrast, the current report shows the average figure among the new models in each fiscal year and the figure for the vehicle with the smallest lead usage among all vehicles. See p. 35.

Report by Tohmatsu Environmental Research Institute

Deloitte Touche Tohmatsu

To the Board of Directors of Toyota Motor Corporation

Objective of our review

We have carried out a review of the Environmental Report 2002 of Toyota Motor Corporation for the year ended March 31, 2002, which is the sole responsibility of the Company's management. Our objective was to express an independent view on the information contained in the report.

Our review procedures

In accordance with your instructions, we performed the following review procedures, which were agreed upon with the Company's management:

(1) A review of the reasonableness of the procedures for collecting and collating the information contained in the report, and

(2) Discussions with, and inquiries of, the Company's management and staff who have responsibility for the preparation of the report, a review of the minutes of the Company's relevant committee, site inquiries, and comparison of the information contained in the report with documents regarding ISO14001, other documents prepared internally, and available published information.

Concerning the data in Global Environmental Data from companies subject to the Company's consolidated environmental management, perusal and collation of records submitted, and inquiries of the Company's staff responsible for the preparation of the data.

Our conclusions

Based on these procedures, our conclusions are as follows:

(1) The data contained in the report was properly summarized from the data prepared by the Company and the companies subject to its consolidated environmental management in relation to their daily operations,

(2) The information contained in the report is consistent with the supporting data obtained during our review.

Tohmatsu Environmental Research Institute

Tohmatsu Environmental Research Institute
July 18, 2002

Additional Explanation on the Procedure Related to Obtaining the Third-Party Report

An additional explanation on the procedure for obtaining the third-party report is provided below.

Step 1 — Audit plan development
1. Confirmation of the items to be included in the report
   (1) Scope of information
   (2) Information collection process
   (3) Information collection method
2. Decision on the items to be audited and auditing methods

Step 2 — Audit execution
Inspection of offices and managers in charge

Step 3 — Audit report
Audit results and issue identification (Reporting of corrective actions and suggestions)

Step 4 — Final version report check
Follow-up on the issues identified in Step 3

Step 5 — Third-party report submission
Submission of the third-party report

On-site inspection of the Honsha Plant's coolant recovery system, with an explanation being offered by the person in charge

Interviewing personnel in charge at the Environmental Affairs Division on environmental cost management

Web sites

Corporate information: http://www.global.toyota.com/ci.html
Investor Relations: http://www.global.toyota.com/ir.html

This Environmental Report has been compiled using the Computer to Plate (CTP) system, resulting in the total elimination of polyester acetate film (approximately 5kg) during the plate making process. This also means that alkaline developing solutions were not required during the developing stage. This report was made from 100% recycled paper, with a whiteness level of 70%. No chlorine was used for bleaching and no surface processing or special coating was applied. Furthermore, by using "Soy Ink" in the printing ink, Toyota has reduced the usage volume of petroleum-based solvents. This report contains very little VOC (Volatile Organic Compounds), and contains no lead, mercury, cadmium, or other heavy metals. For the printing, damping water which contains elements such as alkaline developing solutions or isopropyl alcohol was not used during press plate development and ink transfer; instead a water-less process was employed. For the binding, an easy to separate and remove polyurethane-type glue was used. This Environmental Report was printed by an ISO 14001 certified printing company.

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