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Komatsu is engaged in activities ranging from construction and mining equipment—our core business—to electronics and industrial machinery. Through the conduct of business operations in these segments, Komatsu is driving environmental conservation activities under its Earth Environment Charter, the two main objectives of which are to “provide environment-friendly products and services” and “be environment-conscious in our manufacturing.” Accordingly, in the belief that every corporation should view itself as a citizen of the planet, Komatsu is actively involved in social and cultural programs to “contribute to society as a corporate citizen.”

Komatsu’s Relationship to the Environment

It is our mission to provide solutions that can be employed in the customer’s own manufacturing site. While seeking to achieve that, we must incorporate environmentally responsible technologies in the development of quality solutions for our customers, and all the while further our effort to lessen the environmental impact of our own processes. The following are our major concerns in this regard:

1. The consumption of raw materials, fuels and other resources during the manufacturing stage
2. The use of chemical substances in the manufacturing process
3. The consumption of energy and auxiliary materials, and the resultant emission of environmentally burdensome substances during product use

4. The generation of vibration and noise during product use
5. Emissions of environmentally burdensome substances during the product’s disposal stage

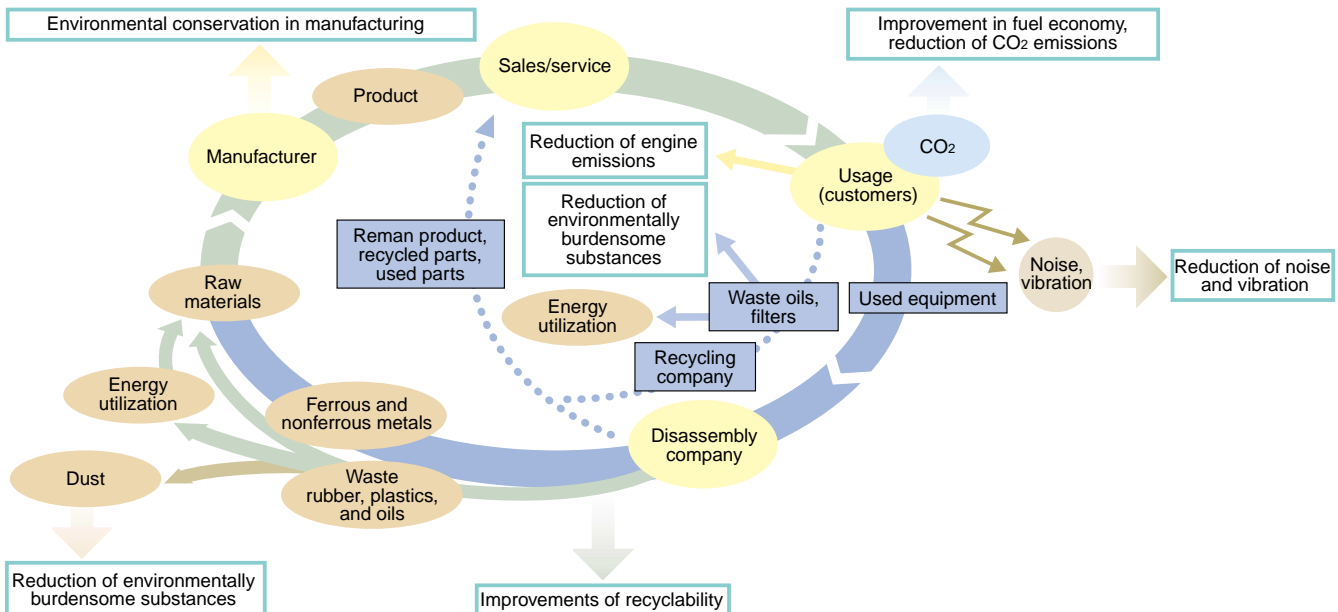
By recognizing the nature of our impact on the environment, Komatsu established the Earth Environment Charter in 1992. Since then, the management and employees of Komatsu have been working as one to identify what can and should be done to lessen our environmental impact.

**Environment-friendly Products and Services
A Responsible Solution for Every Customer**

A construction site can generate vast amounts of debris, warranting efforts to improve the disposal and treatment of construction waste, to reduce such byproducts which make up a significant percentage of the overall industrial waste. Moreover, the disposal of excess soil generated through the preparation of a construction site is a critical issue in environmental management.

Komatsu has responded to such concerns by developing an environment-friendly construction machine under the theme of “on-site recycling construction method” designed for the on-site crushing and recycling of waste and excavated soil. The introduction of this machine has allowed us to step up our comprehensive recycling effort, and has dramatically reduced the logistical costs for waste disposal. Additionally, it has helped reduce CO₂ emissions, along with much of the noise and vibration that would otherwise be generated during the transportation of construction waste to disposal sites.

Interrelation between Lifecycle of Construction Equipment and Environment



Reducing the Environmental Impact Imposed by Our Products and Services

The use of construction equipment inflicts various impacts on the earth's environment, including its atmosphere, water, soil, and people. In fact, during use, construction equipment engines release emissions into the air, and also generates noise and vibration. Depending on the use of such equipment, the fuels, oils, antifreeze, and other substances may be spilled or released on site, thus having an adverse effect on the soil and groundwater. Even the service and/or disposal of our products presents the possibility for environmental impact.

In addition to the development of technology for conserving the environment, Komatsu has implemented a life-cycle assessment (LCA) of environmental impact of construction equipment—encompassing usage, service, and scrapping. In particular, our R&D activities focus on the following technological development:

1. Improvement of Fuel Economy
2. Reduction of Exhaust Emissions
3. Reduction of Noise and Vibration
4. Reduction of Environmentally Burdensome Substances
5. Improvements in Recyclability
6. Development of Biodegradable Hydraulic Oil
7. Recycling of Rubber Crawler Shoes
8. Reman

Environmentally Responsible Manufacturing Operations

In order to reduce the impact our manufacturing activities have on the environment, Komatsu has established various goals for its respective plants. Accordingly, we are implementing a range of environmental measures in the following areas:

1. Energy conservation
2. Protection of the ozone layer
3. Effective use of resources: *Zero Emission*
4. Development of environment-friendly technologies
5. Compliance with regulations and the prevention of pollution
6. Environment-conscious procurement
7. Environmental conservation in logistics

Komatsu regards these activities as standards to be followed by every group company and facility worldwide through engagement in manufacturing operations.

Social Contributions as a Corporate Citizen

Komatsu has since 1962 continuously extended its support to the Flower Association of Japan*, which has long been engaged in beautifying the environment. The association has completed a project to distribute three million cherry trees, along with numerous other accomplishments.

The Komatsu Green Fund was established in 1991. Through it the company makes various social contributions, especially on behalf of environmental preservation, providing one percent of the company's recurring profits as the lower limit of funding. In addition to beautification projects such as the ongoing support for the Flower Association of Japan and our own Floral Komatsu program, which encourages employees to plant flowers around their manufacturing facilities, we are engaged in a project to restore a tropical forest in Indonesia as part of our earth greening activities.



Seedling Laboratory (Indonesia)



Seedling Field

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The Flower Association of Japan, founded in April 1962, is an organization dedicated to the creation of beautiful environments decorated with cherry blossoms and other flowers.

The implementation policies of Komatsu's Environmental Action Plan have been prepared for various fields in order to actualize the company's Earth Environment Charter with regard to progress in specific business activities.

Activity objectives are also established annually in order to check the status of achievement and ensure that action plans be successfully accomplished each step of the way.

Environmental Management

Policies for implementation		Objectives for fiscal 1999	Results for and before fiscal 1999
1. Establishing a concept for implementation		–	• Komatsu established the Earth Environment Committee (in February 1991) and the Earth Environment Charter (in March 1992).
2. Dedicated implementation of the Environmental Action Plan		• To draft and implement plans	• The company published the Environmental Report for fiscal 1999 and introduced environmental accounting practices.
3. Improvements in the company-wide system of environmental management	<ul style="list-style-type: none"> • Introduction of environmental accounting • Publish Komatsu's Environmental Report 2000 	<ul style="list-style-type: none"> • To collect data from the Komatsu Group in Japan • To draft and publish the report 	<ul style="list-style-type: none"> • We have set guidelines for each function and completed the collection of data from the Komatsu Group in Japan. Moreover, we have linked our environmental accounting system with the organization's standing system of financial accounting. • Komatsu drafted the Environmental Report to be published in May 2000.

Research and Development

Policies for implementation		Objectives for fiscal 1999	Results for and before fiscal 1999
1. The development of environment-friendly construction machinery		• To introduce to market	• We developed and introduced the Mobile Tub Grinder BR200T to the market.
2. Construction equipment: Reducing the environmental impact	<ul style="list-style-type: none"> • Environment-friendly diesel engines • Lower emissions • Improvements in fuel economy 	<ul style="list-style-type: none"> • To introduce enhanced products to the market • To be in full compliance with regulations 	<ul style="list-style-type: none"> • Komatsu readied itself for the introduction of engines that comply with the EPA's Tier II emissions requirements. • We achieved best-in-class fuel efficiency, thanks to High-pressure Fuel Injection (HPI).
	• Measures to reduce noise and vibration	• To promote the development and introduction of beneficial technologies	• We employed a low-noise device in the company's two hydraulic excavator models.
	• Midterm Development Targets for Environmental Technology	• To set targets for the years 2005 and 2010	• We completed the setting of targets and started implementation.
	• Reduction of use of environmentally burdensome substances	• To introduce enhanced technologies	• Komatsu finished preparing guidelines regarding the use of environmentally burdensome substances, making it our in-house standard.
3. Ecology and economy in balance		• To assimilate the knowledge of the entire Komatsu Group	• We established our Environmental Forum and launched it via the in-house LAN (local area network).
4. The long-term prospects of environmental research and technology		• To draft and implement a plan of action	• The company's plan was put into implementation on schedule.

Procurement and Manufacturing

Policies for implementation		Objectives for fiscal 1999	Results for and before fiscal 1999
1. Environmental management system: We intend to acquire ISO 14001 certification for Komatsu Group manufacturing facilities located in Japan and overseas by the end of fiscal 2001.		<ul style="list-style-type: none"> To acquire ISO 14001 certification at six manufacturing facilities 	<ul style="list-style-type: none"> Six domestic and overseas manufacturing facilities acquired ISO certification by April 2000.
2. Energy conservation: By fiscal 2010, we intend to reduce the Energy consumption (converted to crude oil) per unit of manufacturing value 15 percent from that of the fiscal 1990 level.		<ul style="list-style-type: none"> To reduce energy consumption 1 percent from the previous fiscal year's figure 	<ul style="list-style-type: none"> We have achieved 0.8 percent reduction in energy consumption from the previous fiscal year's figure and 12.5 percent reduction from the level of fiscal 1990.
3. Protection of the ozone layer: We intend to eliminate the use of specified CFCs and 1.1.1-trichloroethane.		—	<ul style="list-style-type: none"> The use of the specified CFCs and 1.1.1-trichloroethane were abolished in fiscal 1995, and we are now promoting measures to reduce the use of halons and alternative CFCs.
4. Effective use of resources	<ul style="list-style-type: none"> Komatsu intends to promote <i>Zero Emission</i> activities (a plan for the reduction of waste to the zero level by fiscal 2010) 	<ul style="list-style-type: none"> To prepare action plans for a model manufacturing facility 	<ul style="list-style-type: none"> We have prepared a plan by which to achieve <i>Zero Emission</i> of waste at our model facility, the Oyama plant, in fiscal 2003. A 68 percent reduction in emissions was achieved at Komatsu manufacturing facilities from the level of fiscal 1990.
5. Development of environment-friendly technologies	<ul style="list-style-type: none"> We intend to expand our application of dry cutting in machine work. 	<ul style="list-style-type: none"> To steadily introduce new technologies 	<ul style="list-style-type: none"> Komatsu extended the application of dry cutting to nearly 50 percent (346 machines) of the target equipment by the end of fiscal 1999.
6. Compliance with regulations and the prevention of pollution (reduction of environmentally burdensome substances)	<ul style="list-style-type: none"> Komatsu intends to reduce the use of organic chlorine based washing to zero. 	—	<ul style="list-style-type: none"> We completely eliminated the use of the specified substances in fiscal 1998 within Komatsu manufacturing facilities. At the Komatsu Group's domestic manufacturing facilities the use of such substances was reduced 87 percent that of the fiscal 1997 level.
	<ul style="list-style-type: none"> We intend to put measures in effect to replace underground tanks installed more than twenty years ago by the end of fiscal 2001 (at Komatsu Group manufacturing facilities). 	<ul style="list-style-type: none"> To replace twenty aging tanks 	<ul style="list-style-type: none"> Twenty tanks were treated, and measures have been taken regarding 107 out of 140 tanks.
7. Environment-conscious procurement: We intend to clarify environmental awareness among suppliers, and intend to promote the implementation of such procurement practices.		<ul style="list-style-type: none"> To establish guidelines for procurement 	<ul style="list-style-type: none"> Komatsu established its Guidelines for Environment-conscious Procurement, promoting environmental activities in concert with its suppliers.
8. Environmental conservation in logistics	<ul style="list-style-type: none"> Komatsu intends to develop a comprehensive system for domestic transport for heavy loads, reaching beyond the context of individual companies. 	<ul style="list-style-type: none"> To develop a comprehensive transportation system 	<ul style="list-style-type: none"> The new transportation system is scheduled to take effect beginning in fiscal 2001.
	<ul style="list-style-type: none"> We intend to promote resource preservation and waste reduction through the use of recyclable packages (establishing twelve overseas bases by fiscal 2000). 	<ul style="list-style-type: none"> To implement these policies at six bases 	<ul style="list-style-type: none"> The practices were implemented at six bases in Thailand, the U.S., UK, and China.

Sales and Service

Policies for implementation		Objectives for fiscal 1999	Results for and before fiscal 1999
1. Environmental management system	<ul style="list-style-type: none"> To establish a system of internal auditors at Komatsu's distributors 	<ul style="list-style-type: none"> To educate internal auditors 	<ul style="list-style-type: none"> Komatsu provided education programs for 117 employees in 44 domestic distributors*
2. Establishment of a system for Reman components		<ul style="list-style-type: none"> To open Reman centers in six regions worldwide. 	<ul style="list-style-type: none"> We opened Reman Centers in six regions
3. Development and implementation of rubber crawler shoes recycling technologies		<ul style="list-style-type: none"> To open two recycling centers 	<ul style="list-style-type: none"> We opened two recycling centers, in which 3,000 sets of rubber crawler shoes have already been recycled. Appropriate recycling technologies have also been developed.

Distributor: A company that takes on all sales and service work in a given region.

Komatsu's next step, following the introduction of environmental accounting in fiscal 1999, is to disclose information regarding environmental costs and benefits. That step begins with this, Komatsu Environmental Report 2000. Since there are yet no international standards for environmental accounting, the environmental accounting for the year in review is based on the Interim Guidelines for Measuring and Publishing Environmental Conservation Costs published by the Environmental Agency of Japan in March 1999.

Introducing the Environmental Accounting

Komatsu adopted environmental accounting in fiscal 1999 in order to ensure continued effective environmental conservation activities, as well as to disclose the details and results of its activities to customers, shareholders, and other stakeholders.

Environmental accounting policies have not yet been standardized internationally in terms of definitions or categories. Accordingly, Komatsu has established its own guidelines for each functional division in accordance with the Interim Guidelines for Measuring and Publishing Environmental Conservation Costs published by the Environmental Agency of Japan in March 1999. During the initial stage of introduction, a trial environmental accounting was prepared for a model plant. Following the adjustment of problems identified in the trial environmental accounting, Komatsu's own environmental accounting policy was disseminated to Komatsu Group manufacturing facilities in Japan.

Environmental Accounting for Fiscal 1999

Komatsu's environmental investments amounted to ¥1,502 million, and expenses totaled ¥12,580 million. 87 percent of the investments was for the direct spending for reducing environmental impact, while 51 percent of the expenses went to environmental R&D costs.

Regarding benefits, four areas are targeted. They are 1) environmental impact reduction, 2) economically tangible benefits, 3) avoidance of environmental risks, and 4) contribution to profits. While further review regarding the definition and quantification of 3) avoidance of environmental risks and 4) contribution to profits remain necessary, they are included in this year's report as descriptive information. In addition to these benefits, we also hope to see positive results in social benefits and in reducing environmental impact and economically tangible benefits for customers who utilize Komatsu products.

Developing a New Environmental Accounting System

February 2000 saw the birth of a new environmental accounting system that is linked with the existing financial accounting system. Thanks to this new system, more accurate environmental accounting results will be possible for the coming fiscal years, as compared to fiscal 1999. The new system will also allow us to compile highly reliable cost data concerning global operations, including overseas manufacturing facilities. As a result, we will be better able to carry out the progressive implementation of disclosure.

Environmental Costs for Fiscal 1999

Category	Investments		Expenses		
	Investments (million yen)*1	Contents	Expenses (million yen)*1	Contents	
(1) Direct spending for reducing environmental impact	1,314		5,056		
Breakdown	a) Costs of pollution prevention	755	• Improved efficiency of final waste-water treatment facilities *2	2,515	• Maintenance cost of facilities for air/water pollution, noise, and vibration prevention (labor costs, depreciation, etc.)
	b) Earth environmental conservation costs	349	• Renewal of cogeneration systems • Energy-saving measures	1,123	• Maintenance cost of energy-saving facilities such as cogeneration systems (labor costs, depreciation, etc.)
	c) Waste processing/recycling costs	209	• Introduction of slag processing plants	1,418	• Waste-processing cost
(2) Administrative costs relating to the environment	10		422	• Maintenance cost for environmental management system • Expenses for environmental education	
(3) Costs related to the use/disposal of products	7		281	• Expenses on technology for reducing environmental impacts associated with product use/disposal	
(4) Environmental R&D costs	94	• Research on cupola dust recycling technology	6,416	• R&D expenses for reducing product (mainly engine) environmental impact • R&D expenses for mobile recycling equipment	
(5) Costs of environment-related social contributions	22		303	• Expenses for greening and beautification of plants • Expenses of preparing environmental reports and other advertising	
(6) Other costs of environmental conservation	55	• Investment in underground water purification equipment	103	• Expenses required for research and measures associated with previous pollution (soil, ground water etc.)	
Total	1,502		12,580		

*1. For both investments and expenses, amounts were rounded off to the nearest one million yen.

*2. Investments in improving the performance of final waste water processing facilities were made by Komatsu Electronic Metals Co., Ltd.

Environmental Benefits for Fiscal 1999

Environmental impact reduction			Economic benefits				
Environmentally burdensome items	Reduction (tons/year)	Rate of change over previous year (%)	Tangible benefits *2			Avoidance of environmental risks *3	Contribution to profits *3
			Type	Monetary value (million yen)*4	Major activities		
CO ₂ emissions *1	-7,418	-7.8	Energy conservation	328	Introduction of cogeneration systems	Neither accidents nor pollution that led to breach of law took place in Japan during fiscal 1999. No litigation costs were spared in Japan during fiscal 1999.	<ul style="list-style-type: none"> • Business income from mobile recycling equipment • Business income from increased added value due to reduced environmental impact from products • Profit from remanufacturing business
Water consumption	123,765	1.0	Resource saving	688	Reuse of single-crystal silicon		
Waste generation *2	-2,490	-4.5	Reduction of waste, etc.	254	Introduction of slag processing plants		
			Profit on sales of valuables	238	Profit on sales of silicon scrap		
			Total	1,508			

*1 While CO₂ emissions and waste generated have increased in absolute terms due to increased manufacturing, CO₂ emissions and waste generation have declined relative to manufacturing value. (Refer to 4.2 Energy Conservation and 4.4 Effective Use of Resources: Zero Emission).

*2 Benefits of capital investments are reckoned over three years from their introduction. This fiscal year's benefits include investments made from FYs 1997-1999.

*3 Avoidance of environmental risks and contribution to profits are included as descriptive information.

Ways of considering these items and grasping their benefits are subjects for further consideration.

Regarding the description related to contribution to profits, 1999 business revenues are as follows.

- Mobile recycling equipment: ¥7.7 billion

- Engines: ¥37.7 billion (Although engines relate to the entire realm of construction equipment as a power source, the above sales amount represents the amount of the engines sold by the Engines and Hydraulics Business Division including both external and internal deals.)

- Remanufacturing: ¥7.5 billion

*4 Amounts were rounded off to the nearest one million yen.

Social benefits*1

Benefits from reducing environmental impact	Tangible benefits
<ul style="list-style-type: none"> • Reduction of environmental impact due to on-site recycling method • Reduction of environmental impact from products • Reduction of waste parts due to remanufacturing 	<ul style="list-style-type: none"> • Reduction of expenses for processing waste construction materials • Conservation of operating and maintenance costs • Reduction of repair costs

*1 Regarding social benefits, when customer utilize Komatsu products, major categories were included as descriptive information.