Initiatives to Build a Low-Carbon Society

Casio views the air as "a valuable and limited resource," and treats it with care. Casio is striving to minimize CO_2 emissions resulting from its business activities and the consumption and use of its products. Casio will continue to contribute to society by creating environmentally friendly products.

Approach to CO_2 Reduction

Japan's Action Plan for Achieving a Low-Carbon Society, a policy aimed at preventing global warming with a target year of 2050, was approved by the Japanese Cabinet at the end of July 2008. The plan explicitly states that, for the entire world to meet greenhouse gas reduction targets, Japan must reduce its long-term emissions by 60% to 80%. Since Japan is an environmentally advanced country, the plan also calls for Japan to contribute its environmental technologies to the world.

"Environmental management to build a low-carbon society" will be an important part of Casio's environmental management strategy in fiscal 2010 and beyond. Casio is actively promoting efforts to reduce greenhouse gases (CO_2 and SF_6) and to help build a low-carbon society by offering products that contribute to "Green IT" and paperless lifestyles. The company is also introducing Casio Green Star Products representing a new level of green performance, making environmental investments—including energy-efficient equipment and machinery at production sites and office sites—and continuously improving its logistics and packaging materials.

Forest Protection Initiatives

The world's forest resources are being reduced at an alarming rate: forests equivalent to the land area of Japan disappear every five years. Japan is a major consumer of lumber, relying on imports for 80% of its lumber needs.

Casio is uniquely positioned to help protect forests in several ways: (1) by digitizing content; (2) by minimizing product packaging and distribution packaging; and (3) by growing and protecting greenery through volunteer activities.

By digitizing content and minimizing product and distribution packaging, Casio helps to: (1) diversify record-keeping media to reduce the amount of paper consumed; and (2) minimize the amount of energy consumed through recycling.

Casio employees also participate in volunteer activities for cultivating and protecting forests. Employee activities to cultivate and protect local greenery include cutting the undergrowth and thinning watershed protection forests at Kofu Casio. Employees also work to protect roadside trees at Yamagata Casio. At Casio Electronics (Shenzhen) in China, they have organized greenery promotion campaigns and tree-planting activities.

Forests are treasure troves of biodiversity, and they provide a host of ecosystem services. Everyone relies on forests for life, and Casio is no different.

Casio can help by creating products that safeguard the longevity of those ecosystem services.

Employees of Casio Electronics (Shenzhen) participate in a greenery promotion campaign in the city of Shenzhen (April 2009).

Efforts in the Office

Casio Europe

Casio's office sites have shifted from focusing on reducing CO_2 per unit of production to cutting the total volume of CO_2 emitted. In January 2009, Casio Europe integrated its offices, logistics center, and service center, which had previously been located in separate locations around Germany, into a new energy-efficient building. The building has an innovative air conditioning system. To heat or cool the building, water is pumped from geothermal exchange equipment 130 m below ground and circulated through pipes embedded in the concrete ceiling and floor of the building. Also, thanks to blinds that automatically open and close depending on the weather, and systems to control room temperature through appropriate ventilation, the system consumes 30% to 45% less energy than conventional heating and cooling systems.

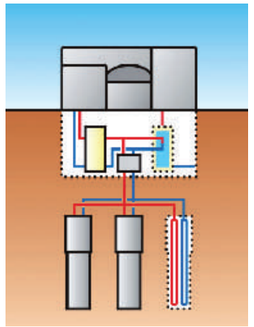


Diagram of the use of geothermal heat

Casio Europe

Hachioji R&D Center

The Hachioji R&D Center does not simply rely on the infrastructural advantages offered by its energy-saving design and construction, but has also been commended for smaller-scale adjustments to the management of more subtle factors in energy use, such as lighting and air conditioning equipment settings. In fiscal 2009, the center earned a AAA rating from the Tokyo CO_2 Emission Reduction Program, and was listed among the Awards for Excellence in Factory Energy Management* sponsored by Japan's Ministry of Economy, Trade and Industry (METI). The center followed in the footsteps of Casio headquarters, last year's winner, to take home the Kanto Bureau of Economy, Trade and Industry Director's Award. As the Casio Group's model office, the center will continue to engage in environmentally friendly activities to help build a low-carbon society.

* To rationalize energy use and contribute to the effective use of fuel and electricity, this award program was developed to promote greater levels of energy efficiency by recognizing factories and workplaces that set the pace for other facilities through their tireless efforts to promote effective energy management.

Contributing to Green IT

Reducing power consumption by integrating servers

Casio has been promoting a series of "information infrastructure reforms" since 2003. In 2005, the company launched its "office environment reforms," the third of its reform efforts. In fiscal 2010, Casio achieved the goals of its office environment reforms, which aimed to optimize the entire company's IT infrastructure using virtual technologies. These efforts were designed to dramatically reduce server costs, improve security, and address environmental problems. Of the reforms adopted, the effort to integrate servers using virtual technologies resulted in the integration of 400 of the 1,000 servers scattered around the group by December 2008. There are now plans to integrate 500 servers, the original target number, by March 2010.

Integrating servers saves a tremendous amount of power, cutting annual power consumption at Casio by 750,000 kWh and reducing CO_2 emissions. With such remarkable results, this project is a lead component of Casio's Green IT efforts.

Assessment categories

	Through Sept. 2008	Oct. 2008 – Dec. 2009	Cumulative total
Number of servers integrated (machines)	360	140	500
Annual electricity reduction (kWh)	540,000	210,000	750,000
Annual CO_2 reduction (tons-CO_2)	196.0	76.2	272.2
Number of Japanese cedar trees needed to absorb the same CO_2	14,000	5,440	19,440

Using projectors to reduce CO_2

Thirty-nine percent of Japan's energy consumption is a result of everyday living, with households accounting for 9.5% and offices accounting for 13%. Efforts to reduce carbon use have been somewhat sluggish in both sectors.

Consider, for example, the paper used in offices. If meetings of five people who are given 60-page information packets are held 100 times a year, and this continues for five years, a total of 150,000 sheets of paper will have been used. The CO_2 emitted in the manufacture of 150,000 sheets of paper is 825 kg-CO_2, while the CO_2 emitted in printing on 150,000 sheets of paper is 201 kg-CO_2. Further, the paper used, converted into a number of trees, represents about 13 Japanese cedars.

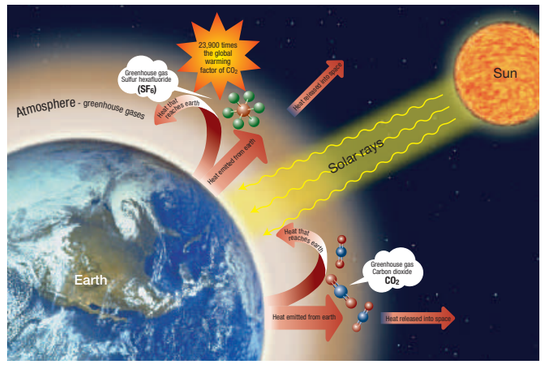
Holding paperless meetings would prevent the cutting of the equivalent of 13 trees a year, which, if they were to live to an age of 50 years, would be able to absorb 9,030 kg-CO_2.

Casio's data projector is essentially a proposal to change people's values. It supports small meetings and creative tasks by making meetings paperless (saving trees), PC-less (saving electricity), and "spaceless" (portable enough to use in any small room), thereby contributing to the adoption of Green IT in offices.

Creating products that move beyond environmentally sensitive design to the active proposal of new values for the realization of a low-carbon society is going to become increasingly important in the future.

Developing an Alternative to SF_6 Gas

SF_6 is a greenhouse gas commonly used in the manufacture of LCDs, but is has a high warming factor. With a factor about 23,900 times that of CO_2, SF_6 presents a serious climate change issue.



Panel describing the greenhouse gas SF_6 exhibited at Eco-Products 2008.

Casio has prioritized the development of an alternative technology for SF_6 to help build a low-carbon society. As a result, in 2008, Casio successfully developed an LCD manufacturing technology using F_2 gas, which has a warming factor of zero. To bring this solution to the marketplace, issues related to LCD mass production, such as the costs related to gas supply, need to be resolved. Today, Casio is working on technological developments with a view to realizing mass production using F_2. This has the potential to reduce greenhouse gas emissions to about 1/100th of the level of conventional technologies used in gas scrubbing equipment.

The goal of LCD makers in Japan for reducing emissions of SF_6 and PFC by 2010 is to "reduce total emissions to the levels recorded in 2000 or lower." The opinion on medium-term measures for reducing emission of three gases, including fluorocarbon substitutes provided by the global warming prevention subcommittee of the chemistry and biology taskforce of the Industrial Structure Council, organized by METI, states first the need for "priority efforts to be made in finding alternative new substances with low greenhouse effects." Regarding liquid crystal and semiconductor manufacturing, it states that "major emissions reductions have been achieved in recent years, particularly with regard to gas manufacturing and semiconductors/liquid crystals, and in the future, adequate care must be taken to avoid an increase in the cost of further reductions."

The technology being developed by Casio complies with the abovementioned recommendations. Casio hopes that this technology will be adopted in the near future by the entire semiconductor and liquid crystal manufacturing industry.

These groundbreaking developments may be difficult for ordinary consumers to recognize, but Casio is driven by its commitment to "Creativity and Contribution" to provide this helpful technology to the world.

Environmental Awareness in Product Development

Casio is introducing eco-designs and creating eco-products, and proposing new ways for people to achieve sustainable lifestyles. In 2009, new targets have been set to guide Casio's activities with the launch of the Casio Green Star Products project.

Logistics Initiatives

In order to reduce CO_2 emissions in the logistics process, Casio is promoting the following three action plans.

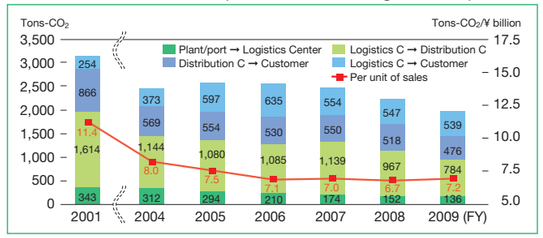
- **Shortening transport distances**
  Promoting direct shipping to customers from logistics centers in and outside Japan
- **Promoting a modal shift***
  Actively using modes of transport with low environmental impact such as rail for transport between sites
- **Improving loading efficiency and reducing transport volume**
  Improving the packaging design of electronic dictionaries and musical instruments, and reducing the volume of packaging

* Casio is currently trying out a transportation method that combines rail and ferry for shipping from Zhongshan, China, to Japan. Full-scale implementation of this method is expected to reduce CO_2 emissions by at least 95%.

CO_2 reduction results in Japan

In fiscal 2009, Casio achieved an 11.4% reduction in CO_2 emissions from the previous year, and a 36.7% reduction compared with the base year (fiscal 2001) per unit of sales.

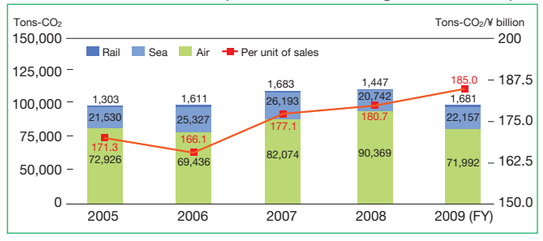
CO_2 emissions and emissions per unit of sales for logistics in Japan



CO_2 reduction results outside Japan

In fiscal 2009, Casio achieved a 14.9% reduction in CO_2 emissions from the previous year, and an 8.0% reduction compared with the base year (fiscal 2005) per unit of sales. Henceforward, to achieve the targets for fiscal 2010, Casio will reduce the size of packaging, reduce air freight, and reduce transport distances.

CO_2 emissions and emissions per unit of sales for logistics outside Japan

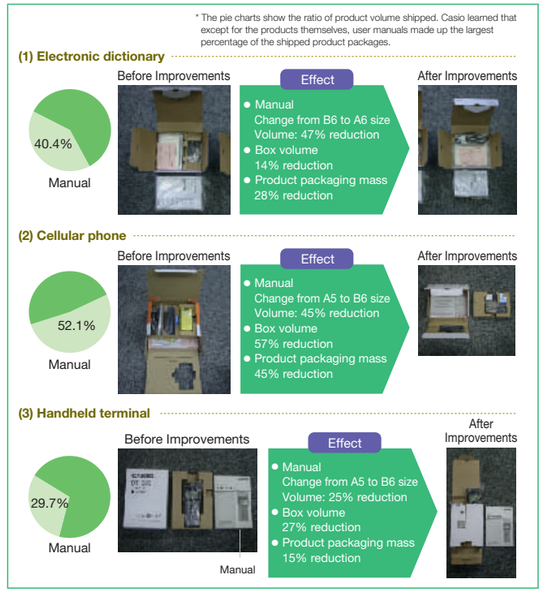


Reducing Packaging Materials by Changing the Size of User Manuals

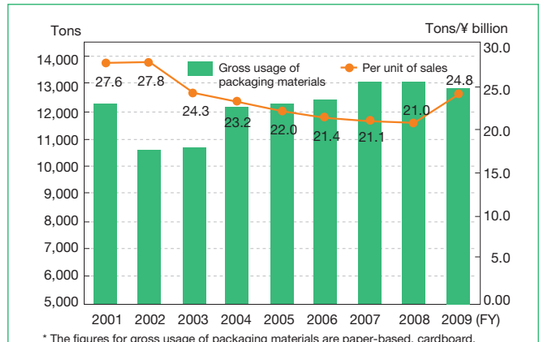
To reduce the amount of product packaging needed, Casio conducted a survey of the shape of the packaging of all of its products, as well as the size and mass of items enclosed with those products. The results showed that the size of the user manuals was a major determinant of the size of the packaging being used.

Casio adjusted the size of the manuals for three products, its electronic dictionaries, cellular phones, and handheld terminals, allowing those products to be packaged more effectively and creating a structure that allows for more efficient shipping. In the future, Casio will continue to make efforts to improve its packaging by monitoring the effects of its total use of packaging materials and watching the trends by unit of sales.

Effects of packaging improvements



Gross usage of packaging materials and usage per unit of sales



* The figures for gross usage of packaging materials are paper-based, cardboard, plastic materials and polystyrene foam.

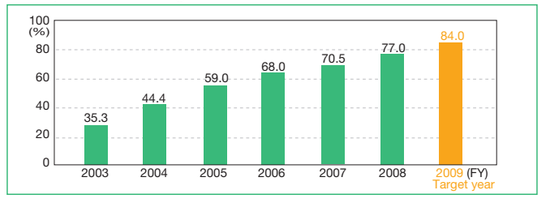
Casio Green Product Performance and Adapting to New Standards

In fiscal 2002, Casio launched its Casio Green Products project to promote the creation of eco-products. Products that meet rigorous standards, based on the results of a product environmental assessment, are certified as Casio Green Products. The company worked toward the goal of achieving a Casio Green Products sales ratio of 80% by fiscal 2009, and achieved it early.

After internal discussions, Casio decided to identify the most environmentally friendly of the Casio Green Products as Casio Green Star Products.* Casio set a new goal in fiscal 2010 of raising the sales ratio of Casio Green Star Products to 30% by fiscal 2013.

*For details, see p. 37

Green product sales targets



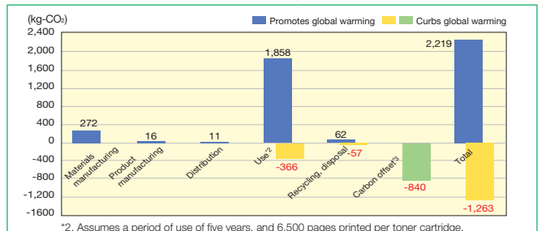
Environmentally Friendly Page Printers

LCA*1 of page printers and toner cartridges featuring carbon offset

A life-cycle assessment (LCA) identifies the CO_2 emissions produced during each stage of a product's life cycle, and yields results that can be used in the development of new products. The results of an LCA performed on the N3600 page printer showed that the CO_2 equivalent output during the use stage was 1,858 kg-CO_2, or 84% of the total output for that product. This means that reducing the power consumed when the product is in use will lead to a reduction in CO_2 equivalent output for the product as a whole. Casio has begun efforts to reduce 47% of the CO_2 equivalent output for the product's entire life cycle by using toner cartridges that offset the CO_2 emissions produced by the electricity consumed during printing.

*1. LCA: A method of quantifying the environmental impact (such as CO_2 emissions) that a single product has on people or the planet over the course of its life, from the materials used, to product assembly, to final disposal of the item.

Effect on global warming
(CO_2 equivalent per SPEEDIA N3600 page printer)



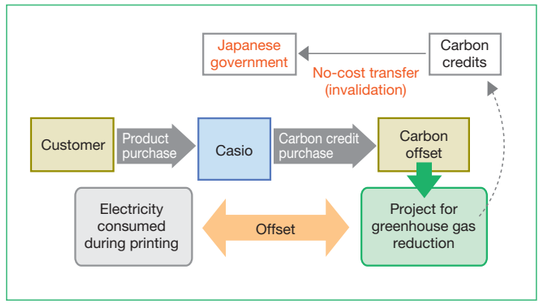
*2. Assumes a period of use of five years, and 6,500 pages printed per toner cartridge.
*3. CO_2 offset when toner cartridge featuring carbon offset is used for five years.

Reducing greenhouse gases with toner featuring carbon offset

Since page printers indirectly contribute to CO_2 emissions through the electricity they use during printing, Casio calculated these emissions based on the amount of toner consumed. Using this information, the company came out with toner featuring a carbon offset. When a customer purchases this toner, Casio obtains carbon credits through a provider in order to offset the electricity used for printing. In this way, Casio is helping customers to simply and conveniently contribute to the fight against global warming whenever they purchase toner.

Casio currently offers carbon offset toner for three page printer models, the N3600, N6100, and B9000, but it plans to make this toner available for new models, as well.

Toner featuring carbon offset: how it works



Models that use toner featuring carbon offset

Fiscal 2009 carbon offset performance report

The following carbon offset has been achieved through the use of toner cartridges featuring carbon offset:

Product/Period:	N3000 Series Return Toner Cartridges (Sold July 1, 2008 to March 31, 2009) N6000 Series Return Toner Cartridges (Sold October 1, 2008 to March 31, 2009) B9000 Series Return Toner Cartridges (Sold October 1, 2008 to March 31, 2009)
Offset amount:	906 tons-CO_2 (CO_2 equivalent tons)
Project name:	HFC Decomposition Project in Ulsan, South Korea (UN CDM Executive Board Registration No: 0003) 4.2 MW Wind Power Project in Maharashtra, India (UN CDM Executive Board Registration No: 0800)
Credit type:	Kyoto credit (Certified Emission Reductions; CERs)
Credit identification no:	KR-000-000-001-188-962 – 189-087 IN-000-000-054-016-079 – 016-858
Invalidation method:	Transfer to retirement account of the Japanese government
Provider name:	gConscious, Inc.