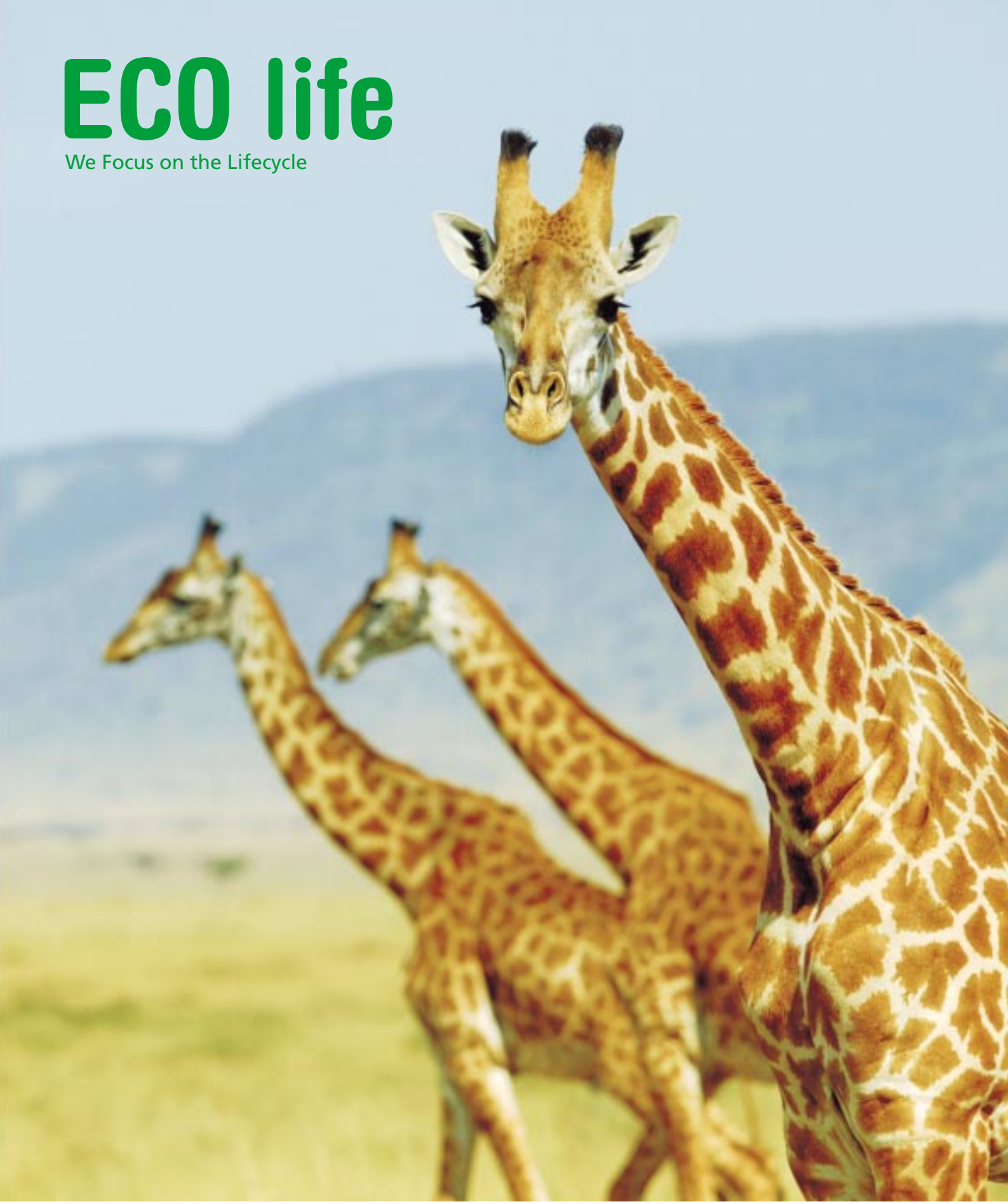
ECO life

We Focus on the Lifecycle



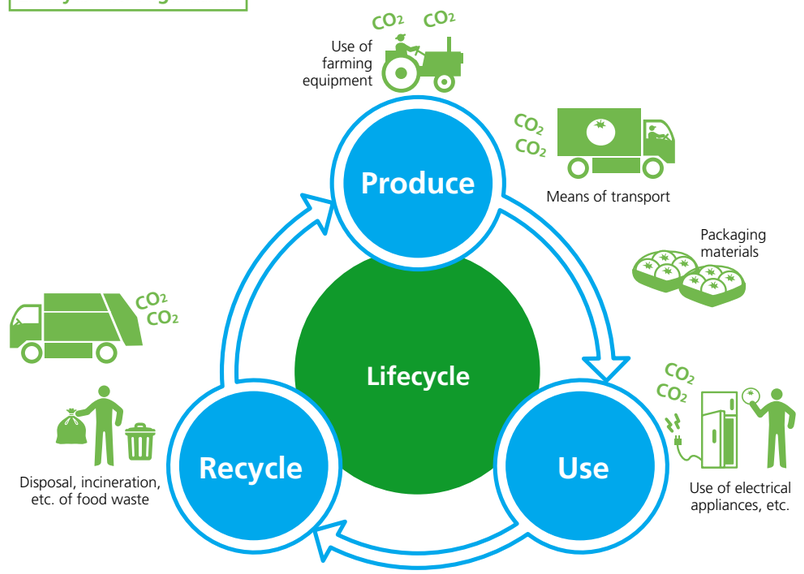
Canon

Did you know that vegetables emit CO_2?

As they grow, vegetables absorb CO_2, a gas that causes global warming.
But what if we consider vegetables in terms of the entire lifecycle?
Even though we don't usually notice it, energy and fuel are consumed and
CO_2 is emitted at various stages, such as when cultivating the soil with tractors, transporting vegetables to stores, and refrigerating them at home. This is not limited to vegetables. We can look at the lifecycle of any item, examining how it is produced, used, and recycled to learn where environmental burden occurs and seek out solutions. For example, in the case of vegetables, we can imagine solutions such as energy-saving tractors and means of transport.
At Canon, we believe that's showing real concern for the global environment.

Look closely at a vegetable across all stages of its "life" and you will see it is connected to CO_2 emissions in various ways.

Lifecycle of Vegetables



Focused firmly on the future, Canon is reducing CO_2 emissions from the broad perspective of product lifecycles

Canon has long been examining how product lifecycles impact the environment. For example, we have been successful in developing compact cameras that efficiently utilize as few resources as possible, copying machines that consume dramatically less energy, and programs for the collection and recycling of used toner cartridges. At each stage of the lifecycle of Canon products—production, use, and recycling—Canon assesses the amount of CO_2 emitted and undertakes efforts to reduce it.

Canon's Vision for 2010

Overriding Indicator: Factor 2

Factor 2 = Effort to more than double environmental efficiency compared with 2000

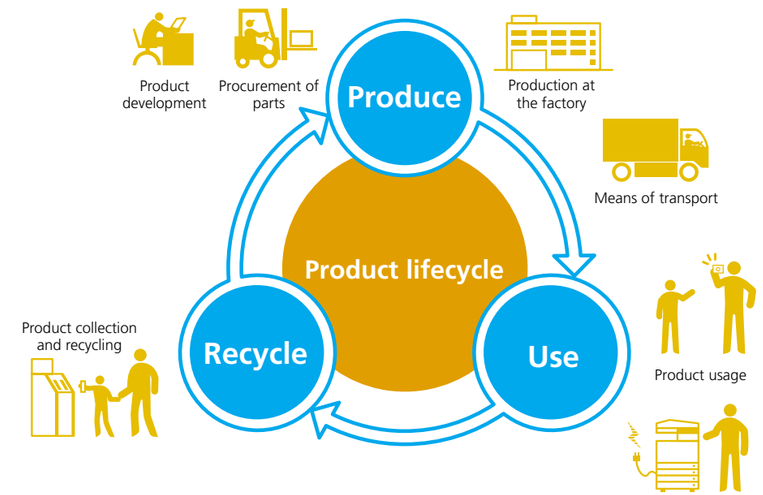
$$\text{Environmental Efficiency} = \frac{\text{Consolidated net sales}}{\text{Lifecycle } CO_2 \text{ emissions*}}$$

*All lifecycle CO_2 emissions for every product of the Canon Group

For example, even if demand for Canon products should expand to the point that net sales in 2010 double those of 2000, Canon will aim to limit the lifecycle CO_2 emissions of its products to approximately 6 million tons, the same amount the company generated in 2000.

Canon's target for 2010: Working to double the environmental efficiency of Canon's product lifecycle.

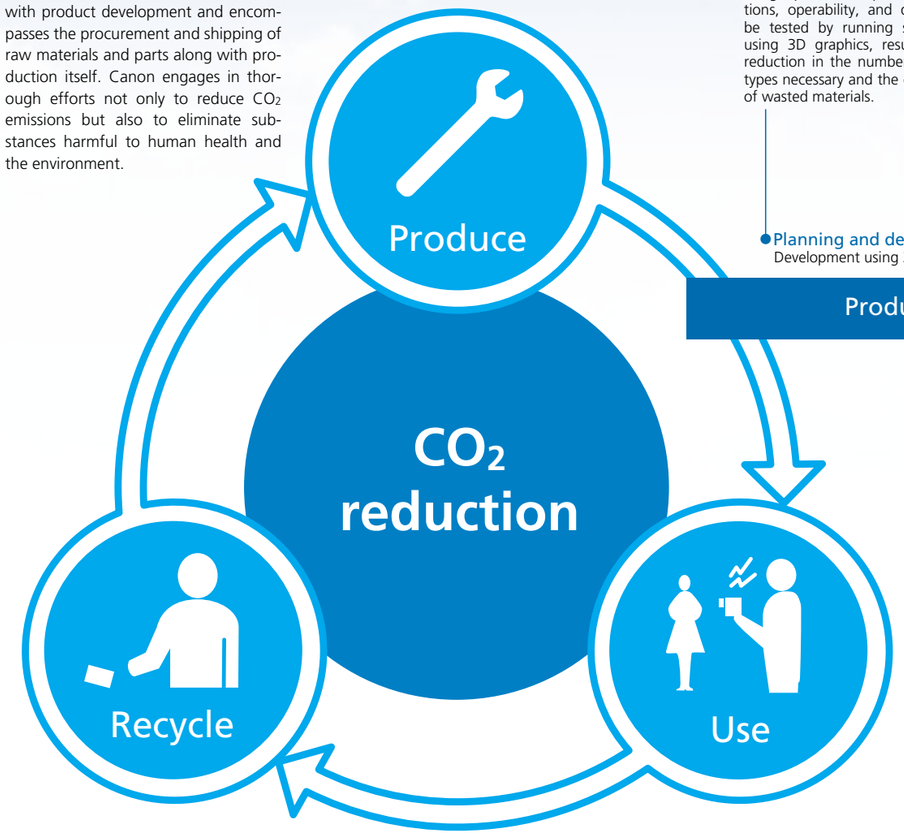
Canon's Product Lifecycle



Comprehensive environmental activities at each and every stage of the product lifecycle

Canon thoroughly analyzes the product lifecycle in terms of the *produce*, *use*, and *recycle* flow and engages in carefully designed environmental activities.

The product manufacturing stage begins with product development and encompasses the procurement and shipping of raw materials and parts along with production itself. Canon engages in thorough efforts not only to reduce CO_2 emissions but also to eliminate substances harmful to human health and the environment.



At the product recycling stage, products that have completed their full service life are put to effective use. After collection, parts from retired products are cleaned and replaced and, following inspection, are reused or recycled to the greatest extent possible.

During the product usage stage, products manufactured in the factory change hands, going to consumers who put the items to actual use. Canon products reduce power consumption through the inclusion of energy-saving technologies.

Development Using 3D-CAD
During product development, Canon employs computers throughout the design process. A product's functions, operability, and quality can be tested by running simulations using 3D graphics, resulting in a reduction in the number of prototypes necessary and the elimination of wasted materials.

Cell Production
In this production method, individual workers carry out multiple assembly processes. In addition to conserving energy through the elimination of conveyor belts, this approach enables Canon to avoid wasteful overproduction, since production volumes can be adjusted to match demand.

Modal Shift
Rail and ship transport are proactively used to ship products. According to some estimates, for a given amount of freight, transporting goods by ship can reduce CO_2 emissions to about one-fourth of the emissions generated by truck-based transport, while rail transport can reduce emissions to about one-eighth.

Recycling of Toner Cartridges
Canon pioneered the collection and recycling of used toner cartridges in 1990. The company has promoted and expanded the program around the world and now achieves a 0% landfill ratio for collected cartridges through parts reuse and material recovery.

Remanufacturing
Collected digital copying machines are disassembled, after which reusable parts are then separated and cleaned, and worn parts replaced. The remanufacturing process concludes with rigorous quality testing.

- **Planning and development**
  Development using 3D-CAD
- **Production**
  Cell production
  Energy-saving factories
- **Shipping of products**
  Modal shift
- **Sales**
  Energy conserving vehicles
- **Recycling**
  Recycling of toner cartridges
  Remanufacturing
  Reutilization of materials

Produce

- **Procurement of parts**
  Green procurement
  Milk runs
- **Packaging**
  Reduction of packaging materials
  Development of new packaging materials

Use

- **Use**
  Energy-saving technologies
  In-house development of key devices
  Resource conservation (compact design)

Recycle

- **Collection**
  Collection of cartridges
  Reverse logistics

Green Procurement
When procuring parts and materials from its suppliers, Canon sets terms not only for quality and price, but also for environmental consciousness. The company also cooperates with others in the industry in developing environmentally conscious production technologies and materials.

Energy-Saving Technologies
Canon has a range of proprietary energy-saving technologies, such as on-demand fixing technology. As a result, power consumption has been significantly reduced in digital copying machines, which generate high levels of environmental burden during use.

In-House Development of Key Components
Canon digital cameras include such Canon-developed key components as the DIGIC III imaging engine and the CMOS sensor, the latter of which is also manufactured in-house. These devices enable Canon cameras to deliver high-resolution performance as well as energy efficiency.

Collection of Cartridges
Canon collects used toner cartridges through collection boxes set up with the cooperation of sales outlets.

Compact and lightweight products use fewer resources. Canon digital cameras not only deliver high performance and ease of use, but also take the environment into consideration.

- Approximately 30 mm thinner and 22% lighter than the PowerShot G6
- Smaller packaging
- Compliance with RoHS and other global regulations on hazardous substances

PowerShot G9
Compact Digital Camera

- Supports collection and recycling promotion activities* for small secondary batteries after use
- Promotes recycling in compliance with the European Union's WEEE Directive

*Recycling memberships: Japan Portable Rechargeable Battery Recycling Center (JBRC), Rechargeable Battery Recycling Corporation (RBRC) in the United States

- High performance despite low power consumption through the utilization of the Canon-developed DIGIC III imaging engine

Thinner and Lighter Camera Body – Produce

Although it offers a 6x zoom lens and a large LCD monitor, the PowerShot G9 is thinner and lighter than earlier models due to its compact lens design and a compact battery made possible as a result of its energy-saving features.

Reduced Battery Size
Battery for PowerShot G6 (left)
Battery for PowerShot G9 (right)

Smaller Packaging ——— Produce

The packaging for the PowerShot G9 was completely redesigned to achieve 35% less volume and 23% less weight than that of the PowerShot G6. This results in fewer resources consumed and less energy expended in transport.

Packaging for PowerShot G6 (left)
Packaging for PowerShot G9 (right)

Features Canon's unique DIGIC III Imaging Engine ——— Use

The Canon's unique DIGIC III Imaging Engine reduces power consumption and achieves image processing speeds several dozen times faster than comparable general-purpose CPUs.

The DIGIC III Imaging Engine

Making possible high-speed and high-resolution performance with low power consumption. What's more, features a compact design that results in fewer resources used.

- Compact body design, resulting in fewer resources used
- Compliance with RoHS and other global regulations on hazardous substances

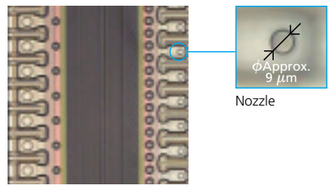
MP610
Inkjet MFP

- Uses recycled plastic

- Supplies power only where and when needed, thereby reducing power consumption
- Two-sided printing function reduces paper use

FINE Printhead Technology ——— Produce

Facilitating high image quality and fast print speeds, FINE printhead technology employs semiconductor production processes to achieve high-precision, high-density nozzles, while also enabling reduced printhead sizes.



Nozzle

Magnified photograph of a printhead
More than 6,000 nozzles are aligned within a space of approximately 20 mm × 16 mm

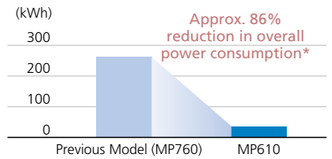
Compact Design ——— Produce

The MP610 delivers outstanding functionality through such features as Quick Start, an Easy-Scroll Wheel and two-sided printing while realizing a body design that has 46% less volume and 19% less mass than the previous model MP760.

Two-sided printing function

Dramatic Power Savings ——— Use

When copying, printing, or scanning, power consumption is reduced dramatically through on-demand operation technology by which power is supplied only where needed.



***Conditions for calculation of overall power consumption:** Daily consumption is based on 16 hours in "power off" mode, with the remaining 8 hours comprising operating time and time in "standby" mode. Operating time is equal to the amount of time necessary to consecutively print 5 pages of color documents and 5 pages of monochrome documents.

Digital MFPs place a high burden on the environment during the usage stage.
Canon has succeeded in reducing power consumption in our color digital MFPs by 80%.

- Compact body design, resulting in fewer resources used
- Compliance with RoHS and other global regulations on hazardous substances
- Dramatically reduced power consumption through on-demand fixing technology
- Exterior plastic casings are recycled for use

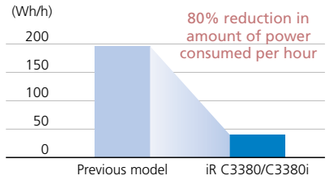
iR C3380/C3380i
(Color imageRUNNER C3380/C3380i in some areas)
Color MFPs

Reduction in the Number of Delivery Trucks — Produce

While the delivery of parts traditionally was conducted individually by each supplier, Canon now uses a "milk run" system, sending its own trucks out on rounds to pick parts up from suppliers, thus reducing the number of trucks needed for parts transport.

Reduction in Power Consumption During Standard Operation — Use

By applying on-demand fixing technology (see p. 10) to color printers/MFPs for the first time, Canon has succeeded in reducing power consumption in sleep mode to 3W, resulting in a reduction of approximately 80% in power consumption during standard operation.



*Calculated using the energy consumption efficiency measurement method for monochrome copying machines (power consumption per hour in a standard operating environment) as stipulated by Japan's Law Concerning The Rational Use of Energy.

Reuse of Exterior Plastic Casings — Recycle

The exterior plastic casings of retired copying machines are recycled into new plastic parts for copying machines.

Promoting environmental consciousness as a trusted business partner.

In the same way that we can choose fresh but inexpensive produce at the supermarket, we now live in an age in which we can select products that take the environment into consideration.

In this way, the small actions of each individual are linked to conservation of the global environment.

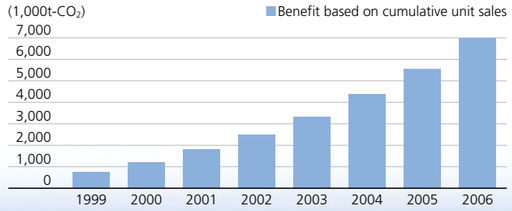
Canon began developing its own environmental technologies early on and is still engaged in the creation of products that take the global environment into consideration.

In the years to come, Canon will continue to advance environmental consciousness as a partner to its customers in response to increasing expectations.

Contributing to CO_2 Reduction through Technology

Canon develops energy-saving technologies for its copying machines and laser beam printers, including on-demand fixing technology, which requires no heat during standby mode, and induction heating (IH) fixing technology, which dramatically reduces warm-up times. In the eight-year period between 1999 and 2006, these technologies contributed to a cumulative reduction in CO_2 emissions of approximately 6.99 million tons.

- Reduced Environmental Burden Through Energy-Saving Technologies



*Assumes that copying machines and laser beam printers sold in previous years remain in use for eight years.

A Step Ahead: Early Compliance with Environmental Laws and Regulations

The European Union's RoHS Directive, which went into effect in July 2006, restricts the use of six hazardous substance groups (lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE) in products. Canon led the industry with the launch of RoHS-compliant products in 2004. Since then, the company has engaged proactively in product development, and all new Canon products are in compliance with the Directive. In the future, Canon will work to achieve swift and thorough compliance with all applicable laws and regulations around the world.

Photograph: Tsuyoshi Takeda, The Asahi Shimbun

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Supporting Global Environmental Projects Around the World

At Canon, being an Excellent Global Corporation in accordance with our philosophy of *kyosei*—living and working together for the common good—means fulfilling our social responsibility through the support of social and cultural activities around the world. We also assist in numerous environmental conservation projects.

Eyes on Yellowstone

Eyes on Yellowstone is a Canon-supported education and research program in partnership with Yellowstone National Park in the United States. Canon provides imaging equipment to record video and other images of rare wildlife, making possible "virtual field trips" through Yellowstone's Windows Into Wonderland website. Children from all over the world visit the site to experience nature and learn about the global environment.

Web-based class in New York, U.S.A.

WWF Conservation Partner

In 1998, Canon Europe became the first company to be named a WWF (World Wide Fund for Nature) Conservation Partner. Over the more than eight-year relationship, Canon has supported WWF's activities through such means as digitizing the organization's valuable photo archive and sponsoring projects on the ground such as polar bear tracking in the Arctic.

© WWF-Canon/Michel TERRETTAZ

Tree-Planting Activities around Asia

In various locations around Asia, Canon is engaged in tree planting activities and other environmental conservation initiatives. In Malaysia, at an elementary school near Canon Opto (Malaysia) Sdn. Bhd., the company planted trees to enhance the children's awareness of the environment, while in the city of Zhuhai, China, company employees and their families planted trees in a public park.

Planting trees in Zhuhai, China

Canon Envirothon

Canon U.S.A. and Canon Canada support the Canon Envirothon, which ranks among North America's largest high school environmental education competitions. In this event, high school teams compete based on their knowledge of the environment. The Canon Envirothon is held annually and draws over 500,000 students and volunteers from the United States and Canada.

Winning team at the 2006 Canon Envirothon

Canon's Efforts for the Environment

Canon undertakes a wide range of compliance, environmental, and other activities to realize its goal of contributing to the sustainable development of society. Canon communicates these measures to a broad range of stakeholders through its website, which can be viewed at the following address.

www.canon.com/environment

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