TOSHIBA

Leading Innovation

# 2014 Environmental Report

TOSHIBA eco style

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# Toshiba Group Business Overview

## Company Overview (as of March 31, 2014)

| | |
|---|---|
| **Company name** | Toshiba Corporation |
| **Headquarters address** | 1-1, Shibaura 1-chome, Minato-ku, Tokyo |
| **Founded** | July 1875 |
| **Paid-in capital** | 439.9 billion yen |
| **Consolidated net sales** | 6,502.5 billion yen |
| **Number of employees (consolidated)** | 200,260 |

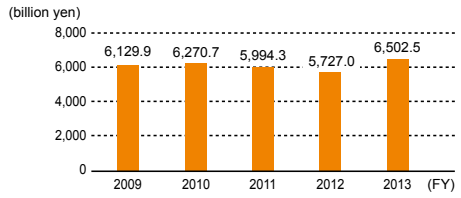
**CSR-related international charters/guidelines Toshiba endorses**

- United Nations Global Compact
- Global Reporting Initiative (GRI)
- Electronic Industry Code of Conduct (EICC)

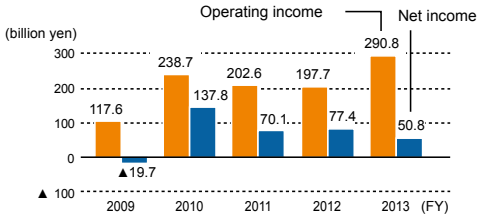
| | |
|---|---|
| **Number of shareholders** | 436,540 |
| **Number of shares issued** | 4,237,600,000 shares |
| **Number of consolidated subsidiaries** | 598 (177 in Japan, 421 overseas) |
| **Number of affiliates accounted for by the equity method** | 208 |
| **Stock exchange listings** | Tokyo, Nagoya, London |

## Financial Results (Consolidated)

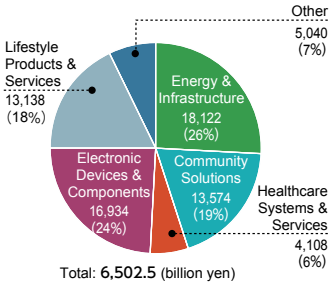
### ■Net Sales




### ■Operating Income & Net Income

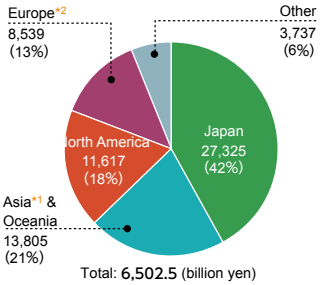



### ■Sales by Business Segment (FY2013)



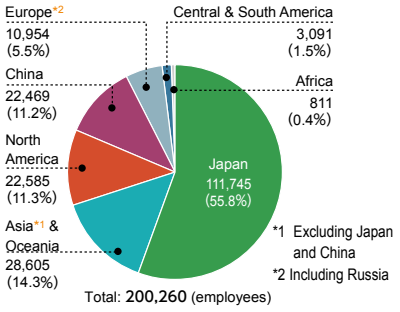

Total: 6,502.5 (billion yen)

### ■Sales by Region (FY2013)




Total: 6,502.5 (billion yen)

### ■Number of Employees by Region (FY2013)




Total: 200,260 (employees)

Note: Eliminations of sales among segments were 589.1 billion yen

## Main Products and Services

### Energy & Infrastructure

- •Thermal and nuclear power generation systems
- •Hydroelectric, photovoltaic, geothermal and wind power generation systems
- •Power transmission-transformation-distribution systems
- •Smart meter
- •Smart grid system
- •Railway and Automotive systems
- •Motors and drives
- •Rechargeable batteries
- •Security and automation systems
- •Radio systems

### Community Solutions

- •Urban infrastructure solutions
- •Building solutions such as air conditioners, lightings and elevators
- •Home solutions

### Healthcare Systems & Services

- •Diagnostic imaging units such as MRIs and CT scanners
- •Heavy ion radiotherapy system

### Electronic Devices & Components

- •NAND Flash memories
- •Storage products (HDD, SSD)
- •Discrete semiconductors
- •System LSI

### Lifestyle Products & Services

- •Home electric appliances such as TV, Blu-ray disc recorder, PC, tablet, refrigerator and washing machine

# Toshiba's Vision


# Toshiba Group Management Policy Vision

**Growth Through Creativity and Innovation**

Pursue growth that does not overly depend on market growth, but is generated by Toshiba's creative powers

| Value Creation | Productivity Improvement |
|---|---|
| Focus on customers' points-of-view<br>Combine values to create synergies and expand applications | Promote most effective use of resources and assets<br>Enhance quality, efficiency and speed in all businesses |

**Globally develop diverse, talented, creative people**

Always integrate new perspectives and pursue creative new ideas

**Push Forward with CSR Management**

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# Editing Policy

Toshiba Group has published the Environmental Report since FY1998 (From FY2004 to FY2007, environmental information was provided in the CSR Report). This report is published to provide detailed environmental information on Toshiba Group to all stakeholders of the Group. The content of this year's edition was expanded to include information on the progress of the Fifth Environmental Action Plan, as well as on the new concept for stepping up environmental management, Toshiba Group Global Environmental Action aimed at encouraging participation by all employees, initiatives for products with the highest level of environmental performance, and production sites' efforts to mitigate climate change. At the same time, to contribute to reduction in environmental impact, the report will be published only on Toshiba's website with its print version not issued.

## ■ Providing detailed environmental information

http://www.toshiba.co.jp/env/en/index.htm

**Environmental Report 2014 and website for environment**



**●Major contents**

- More detailed data, prior cases
- Latest information on a timely basis
- Movies
- Environmental Report by Sites
- Search (function) by theme

## ■ Providing financial information

http://www.toshiba.co.jp/about/ir/index.htm

**Annual Report 2014 and website for investor relations**



## ■ Reporting on CSR activities (social and environmental) in general

http://www.toshiba.co.jp/csr/en/index.htm

**CSR Report 2014 and website for CSR activities**



**●Organizations covered**

- In principle, this report covers Toshiba Group (Toshiba Corporation and its 598 consolidated subsidiaries in Japan and overseas). In cases where the report covers entities other than Toshiba Group, the individual entities are indicated.

Note:In this report, “Toshiba” refers to Toshiba Corporation.

**●Reporting period**

- This report focuses on the results of activities in FY2013 (April 1, 2013 to March 31, 2014), but includes some activities continuing from the past and some more recent activities.

**●Publication**

- The current issue was published in November 2014 (The publication of the next issue is scheduled for June 2015; the previous issue was published in October 2013).

**●Significant change during the reporting period**

- In May 2013, upon Toshiba Corp.'s transfer of all its shares in Toshiba Finance Corp. to Aeon Financial Service Co., Ltd., Toshiba Finance was excluded from Toshiba's consolidated subsidiaries.
- In order to acquire the electric power, distribution transformer, and switchgear businesses of Vijai Electricals Ltd., an Indian corporation, Toshiba established a new company (the current Toshiba JSW Power Systems Pvt., Ltd). This new company acquired these businesses in December 2013.
- In January 2014, Toshiba Consumer Electronics Holdings Corporation was disbanded upon being absorbed by Toshiba Corp.

**●Reference guidelines**

- Global Reporting Initiative (GRI)
  Sustainability Reporting Guidelines Fourth Edition (G4)
  Note: GRI Content Index shown on the environmental website
- Ministry of the Environment of Japan
  (http://www.toshiba.co.jp/csr/en/search/gri.htm)
  Environmental Reporting Guidelines 2012
  Environmental Accounting Guidelines 2005

**●Ensuring universal design in terms of color vision**

We made efforts to ensure the text and charts herein are easy to read for as many readers as possible irrespective of differences in color vision. For details, please visit our environment website.

**Disclaimer**

This report includes descriptions of Toshiba's future plans and strategies, as well as prospects of its financial results. These descriptions and prospects are based on matters decided and opinions formed using information that is obtainable at this time.

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# Index

## Vision and Strategies



## Greening of Products



## Greening by Technology



## Greening of Process



## Green Management

# CEO Commitment


## Environmental Initiatives Supported by All Employees

In order to solve environmental issues, it is important for each and every Toshiba employee to share the same mindset and work together with a sense of solidarity. I believe the 200,000 Toshiba Group employees will be able to contribute greatly to solving environmental issues through their concerted efforts. To this end, there is a need to expand the foundation of our environmental management using easy-to-understand concepts and tools which can be shared not only among a small number of experts but by all people everywhere. For this reason, we launched Toshiba Group Global Environmental Action in FY2013 to enlist the participation of all 200,000 Toshiba Group employees working around the world. We implemented a light-down campaign on June 5, World Environment Day, and shut off lights in offices and employees' homes. In FY2014, we expanded the scale of this action, implementing a variety of environmental programs worldwide during the two-month period from April to June. In addition to selecting crucial environmental issues in different regions as program themes, the employees also shared the contents of environmental programs at different business and product sites on websites and ceremonies using `Toshiba Baton` as the icon of the campaign developing a sense of global solidarity. Further, we held a World Environment Day event on June 5 this year as well, which was attended by representatives of business sites who gathered in Kawasaki to report on environmental programs.

We will continue our efforts to maintain active communication in order to make the environment a common theme for all Toshiba employees.

## T-COMPASS, a New Concept of Environmental Management

When I was appointed President in FY2013, I adopted a new management policy of achieving growth through creativity and innovation. By creating value through value innovation and new concept innovation as well as by improving productivity through process innovation, we generate engines for growth unique to Toshiba. To follow the same policy for environmental management, we have introduced a new original concept of environmental management.


This new concept, which we call T-COMPASS, is Toshiba Group's environmental compass; it represents environmental issues having high priority in terms of global importance and urgency using the four cardinal compass points (N, E, S and W): minimizing the amount of **N**atural resources consumed; responding to climate change and **E**nergy issues; minimizing the risks posed by chemical **S**ubstances; and minimizing the amount of **W**ater resources consumed. We will carry out environmental management to achieve these goals.

According to the recently published Fifth Report of the Intergovernmental Panel on Climate Change (IPCC*1), there is a greater-than-95% chance that the rise in global temperature is a result of human activities. The report points out that the risk of climate change is serious enough to threaten the foundation of future business management. We will bring together the collective resources of Toshiba Group to address the risks posed by climate change and to comprehensively solve a variety of emerging environmental issues, including management of water resources, conservation of rare resources and mitigation of air pollution.

Using the four cardinal points of the compass, we will systematically organize the environmental strategies we have formulated thus far as well as further develop environmental measures by promptly incorporating global trends in each domain. To minimize the amount of natural resources consumed (N), in addition to creating products with the highest resource-saving performance, we will enhance measures to recycle resources, including expanding the use of recycled materials, and additionally launch a 3R diagnosis program aimed at achieving high-efficiency manufacturing. In an effort to respond to climate change and energy issues (E), in addition to global development of products having the highest level of energy-saving performance, we will continue to enhance measures to promote use of renewable energy and to ensure compliance with the Scope 3 Standard. To minimize the risks posed by chemical substances (S), we will continue our efforts to go one step beyond the requirements imposed by global legal regulations, such as reducing the use of PVC/BFRs*2. We also aim to reduce the use of chemicals by reviewing our manufacturing processes. Finally, to minimize the amount of water resources consumed (W), in addition to expanding the scope of products and solutions that contribute to reducing water consumption, we will enhance measures to reduce our water footprints and manage production sites to minimize water stress. Through these efforts, we aim to reduce our environmental footprints by introducing measures to promote environmental conservation in terms of products and manufacturing.

*1 IPCC : Intergovernmental Panel on Climate Change

*2 PVC/BFR : Polyvinyl Chloride/Brominated Flame Retardants

## Steady Implementation of the Fifth Environmental Action Plan

Immediately after I became director in charge of environmental issues in 2011, I started to develop a new grand design from scratch and established specific performance goals we must achieve in order to establish our position as the world's foremost eco-company. The Fifth Environmental Action Plan was formulated as a specific action plan to realize our vision, and more specific strategies are currently being promoted as part of our four “Green” initiatives. As of FY2013, we have achieved our goals in many areas, and our initiatives have received accolades from outside evaluators as well. Nevertheless, in some areas we must still step-up our efforts. This fiscal year, we enter the second half of the plan's four-year period. In FY2015, we will further promote integration of business operations and environmental management in all business areas with a view to achieving all our goals.

## Greening of Products

We aim to achieve the highest level of environmental performance for all products we develop, thereby reducing environmental impact throughout product life cycles. In FY2013, our sales of Excellent ECPs, which achieve the highest level of environmental performance, increased to 1.6 trillion yen. This fiscal year, we aim to achieve the FY2015 goal of 1.8 trillion yen in Excellent ECP sales one year ahead of schedule. We will also continue to carry out our initiatives aimed at enhancing total environmental performance, including those for expanding the use of recycled plastics and reducing the use of PVC/BFRs.

## Greening by Technology

By developing low-carbon power sources, we will contribute to providing a stable power supply and mitigating climate change worldwide. In FY2013, the start of operation of some nuclear power generation facilities was delayed. Consequently, we were unable to achieve our goals regarding sales of energy-related equipment and reductions in $CO_2$ emissions. Going forward, we will expand the use of renewable energy as well as improve the efficiency of thermal power generation.

## Greening of Process

We will improve productivity and also simultaneously implement various measures to reduce environmental impact in order to achieve the world's most efficient manufacturing. In FY2013, we reduced greenhouse gas emissions to 2.76 million tons, greatly exceeding our goal, by implementing a variety of measures, including energy conservation investments and energy conservation diagnosis. In addition, we are making steady efforts toward reducing our environmental impact in different areas, such as waste amounts, total amount of chemical emissions and amount of water received per unit production. Despite these efforts, we were unable to achieve our goal regarding the percentage of final waste disposal. Therefore, we will improve and innovate manufacturing processes from the perspective of the three R's through activities such as implementing emissions reduction measures at domestic production sites and developing know-how overseas.

## Green Management

We will strive to strengthen the foundation of our environmental management by developing human resources to carry out environmental initiatives and by improving our environmental management systems on an ongoing basis. Through our biodiversity conservation initiative, we are contributing to the development of ecosystem networks in various regions through the creation of biotopes at our 64 global production sites. In addition, we will undertake a wide range of communication activities in order to build relationships of trust with our stakeholders.

# Toshiba Group Global Environmental Action 2014

## Connecting environmental activities with the symbolic `TOSHIBA BATON`

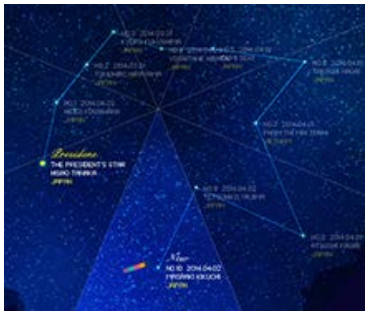
The Fifth Environmental Action Plan aims to expand environmental communication to connect people around the world. Last fiscal year, we launched Toshiba Group Global Environmental Action initiative. We designated June 5, World Environment Day, as the day for Toshiba Group Global Environmental Action, and all Toshiba Group employees in various parts of the world take environmental actions together on this day. We are working to achieve participation of all 200,000 of our employees around the world in order to raise employees' environmental awareness and foster a sense of togetherness.

In FY2013, we carried out a global light-down campaign on the night of June 5. In FY2014, we increased the scale of this campaign. Designating the approximately two months from April 1 as the campaign period, we implemented approximately 150 environmental activities in 20 countries (see the photos below). We established linkage between activities at different sites around the world by passing a baton symbolizing our environmental action project on websites and at ceremonies. These activities were carried out under themes related to crucial local environmental issues, such as energy and water resources, chosen from among the issues addressed by T-COMPASS, our new concept of environmental management.

## WHISPER BATON PROJECT

During the period of Global Environmental Action 2014, we opened a message sharing website, TOSHIBA BATON WHISPER BATON PROJECT, which allows each Toshiba Group employee to make his or her individual declarations and report on environmental activities. This website conveys the message that “Each Toshiba Group employee's voice will gradually coalesce into a collective voice, bringing about changes for a better world, just like the beautiful constellations shining above us.” President Tanaka himself contributed a message, drawing the attention of other participants.





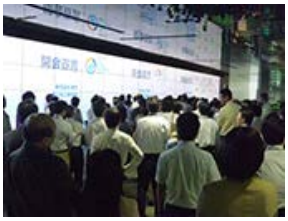
## Toshiba Group Global Environmental Action 2014 Activity Report Ceremony Held as a World Environment Day Event

To raise employees' environmental awareness and promote a sense of togetherness, we held a World Environment Day event for four days from June 5 at Lazona Kawasaki Plaza in Kawasaki City as well as at Toshiba Smart Community Center. On June 5, World Environment Day, we held an Activity Report Ceremony to summarize the environmental activities we had carried out in various parts of the world over the previous two months. Toshiba Group employees and visitors from the general public shared information about the global environmental activities through the ceremony events, which included the presentation of an activity report video on a large display, comments by local representatives, and an environmental message by President Tanaka. After the ceremony, we presented an environmental video on a large display and also showcased environmental activities on panels in order to raise attendees' environmental awareness. In addition, we held an environmental workshop for children. Many parents and children participated by making photo stands using recycled cardboard and by assembling lights that generate power by shaking magnets. At Lufa Plaza of Lazona Kawasaki Plaza, we installed Flower Galaxy, a monument that represents cosmic space with flowers and grass. Visitors and Toshiba employees wrote messages about the environment on star-shaped cards and decorated Flower Galaxy with numerous stars.

### Activity Report Ceremony

On June 5, we invited Kawasaki City Deputy Mayor Mr. Miura, city government officers, visitors from the general public, and media reporters to an activity report ceremony at Toshiba Smart Community Center.

Corporate Senior Vice President Nishida started the ceremony by giving the opening declaration, which was followed by a presentation on environmental activities at representative Toshiba Group production sites in countries around the world. Representatives from Japan, China, Asia, Europe and the Americas appeared on stage one after another in accordance with the scenes in the video. They passed a baton among them as if they were in a relay race, handing it finally to President Tanaka. Then, President Tanaka, Kawasaki City Deputy Mayor Mr. Miura and the Kawasaki environmental mascot presented environmental messages.




**Through environmental activities supported by the participation of all employees, we aim to become the world's foremost eco-company trusted by society.**

The concerted efforts of 200,000 Toshiba Group employees will greatly contribute to solving environmental issues. People around the world share the wish to protect our beautiful environment and hand it down to the next generation.
Toshiba Group's slogan is “Committed to People, Committed to the Future.” Our mission is to contribute to creating a sustainable society for the future that is friendly to all people. As a representative of Toshiba Group, I will pass this baton to the next generation through activities aimed at conservation of the global environment.

Hisao Tanaka
Director, President and CEO, Toshiba Corporation

In the Americas, approximately 30 Toshiba sites participated in Global Environmental Action campaign. In order to convey President Tanaka`s expectations about this campaign and to motivate Toshiba employees, my team members and I visited Toshiba companies around the U.S. and held frequent telephone conference calls.

Craig Hershberg
Director of Environmental Affairs of Toshiba America, Inc.

Toshiba Group planted trees at the China Environmental Protection Foundation's tree-planting site in Beijing City. From Toshiba China Co., Ltd. and seven Toshiba Group companies in Beijing City, approximately 220 employees and family members participated in the tree planting. We will continue to work with our group companies in China to carry out environmental activities.

Gao Yuan
Deputy Manager, Environmental Division, Toshiba China Co., Ltd.

## Flower Galaxy

At the Flower Galaxy exhibition, we displayed environmental messages collected in the Whisper Baton Project alongside messages from visitors to the event. After the event, we distributed the flowers to visitors to Lazona Kawasaki Plaza.

## Panel Exhibition and Press Conference

We also held a panel exhibition, where photographs were displayed to showcase Toshiba Group's environmental activities around the world, as well as a press conference.

# Environmental Management Concept “T-COMPASS”

## We will further advance and expand our environmental management systems by strategically addressing new global trends in environmental management.

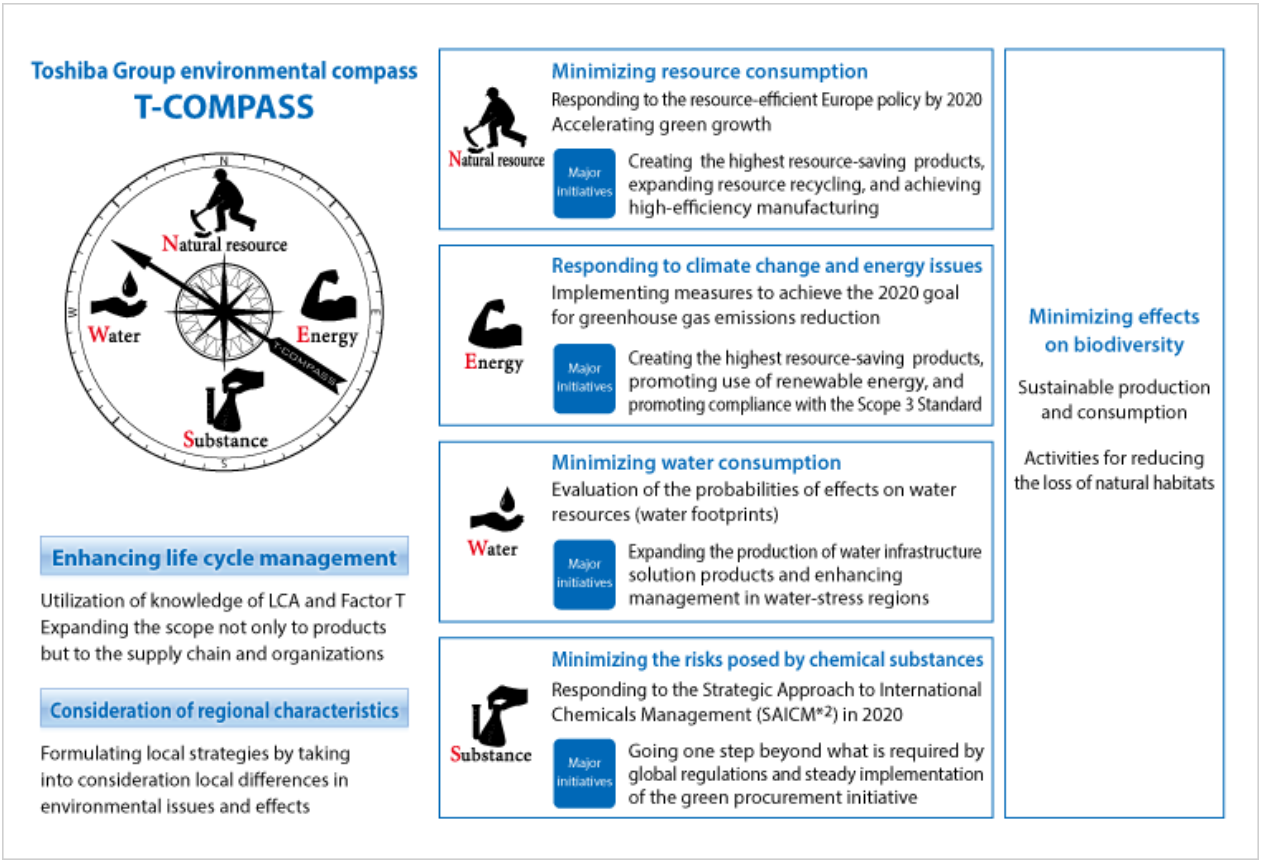
Toshiba Group has introduced T-COMPASS*1, a concept of environmental management, to achieve two aims. One of these aims is to enhance management focused on multiple environmental areas (multiple criteria) and product life cycles; this represents a new global trend. As we strive to help realize a sustainable society, responding properly to energy problems and climate change is our highest priority. In addition to these global environmental issues, however, there are many local agendas such as factors influencing human health, ecosystems, and resources; all these issues must be resolved comprehensively. As Toshiba Group's compass for its environmental activities, T-COMPASS defines four domains for the group's environmental contributions and represents these domains as the symbols of the four cardinal compass points. In the future, we will enhance our environmental policies from the following four perspectives: minimizing the amount of natural resources consumed, responding to climate change and energy issues, minimizing the amount of water resources consumed, and minimizing the risks posed by chemical substances.

In addition, by making effective use of the knowledge of LCA and Factor T that we have acquired so far, we will quantify environmental impacts in the four domains to identify hot spots. We will systematically categorize measures implemented in the past into the four T-COMPASS domains and introduce various measures to enhance our environmental management with respect to products and manufacturing. For example, we will promote resource recycling to minimize the amount of resources consumed; promote the use of renewable energy and ensure compliance with the Scope 3 Standard to respond to climate change and energy issues; go one step beyond what is required by global regulations, such as reducing PVCs , to minimize the risks posed by chemical substances; and enhance management of production sites by taking water stress into consideration to minimize the amount of water resources.

We will also expand the scope of environmental management not only to individual products but also to our supply chain and organizations. Further, we will take into consideration local differences in environmental issues and strengthen our environmental strategies for different regions.

Our second aim is to expand our environmental management network. To realize environmental management supported by the participation of all Toshiba Group employees around the world, we must share a commitment to contributing to solving all environmental issues as the world's foremost eco-company. In Toshiba Group Global Environmental Action 2014, to develop action programs in countries around the world, we selected issues appropriate for different regions from among the environmental issues addressed in T-COMPASS.

Toshiba Group's approach of reducing overall environmental impacts remains unchanged. We believe that by presenting our environmental contribution in more visual and concrete terms in four major domains, Toshiba Group will be able to further share the social values that we provide with stakeholders inside and outside the Group. We aim to disclose environmental information in an easier-to-understand way while carrying out the most advanced discussions on environmental management.



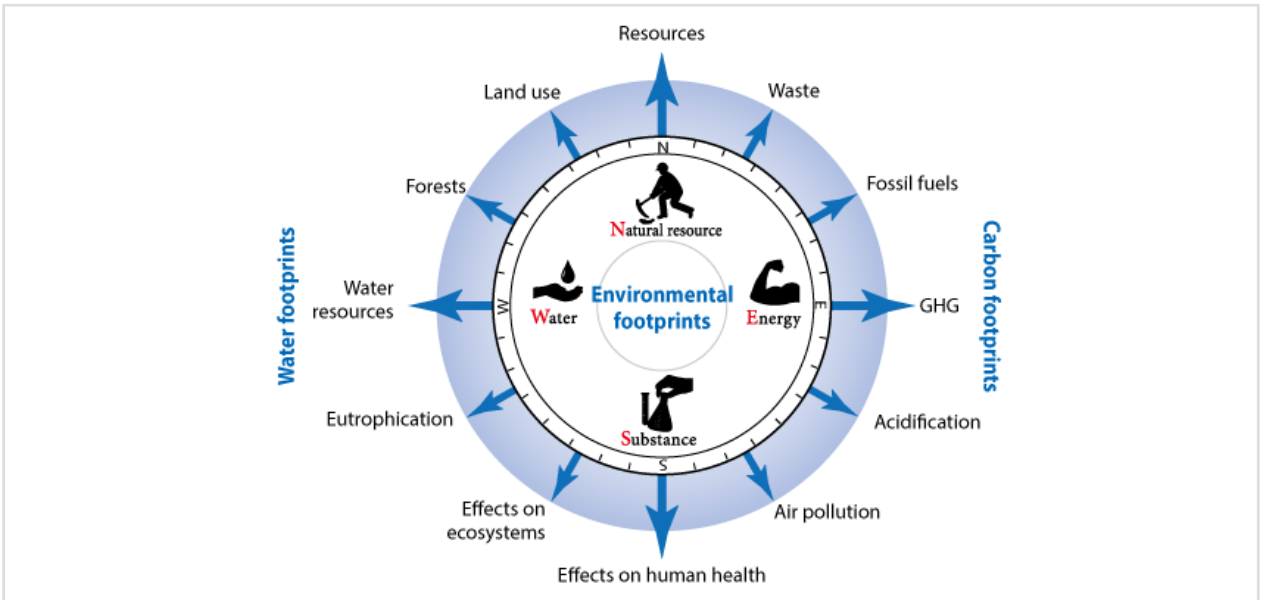

*1 T-COMPASS :
Toshiba Comprehensive environmental database and its Practical Application to Simplified and/or Streamlined LCA

*2 SAICM :Strategic Approach to International Chemicals Management

## Characteristics of T-COMPASS

### Characteristic: Visualizing the environmental impacts by Toshiba Group's unique radar chart

T-COMPASS expresses LCA-based environmental indicators using its own radar chart. Symbols of the four cardinal compass points are used to represent the four major domains all Toshiba Group companies should address. The environmental footprint standard, which combines standards for assessing carbon and water footprints that have been recognized as global trends in recent years, makes reductions in overall environmental impacts easy to understand visually. Highly relevant environmental indicators are arranged appropriately along different axes; the radar chart depicts the structure of life cycle impact assessments in a simplified way. In addition to typical environmental indicators in the four major domains, other indicators are also defined in detail (up to eight or twelve points on the compass), thus enabling more detailed eco-designs.



### Characteristic: Giving thought to regional characteristics

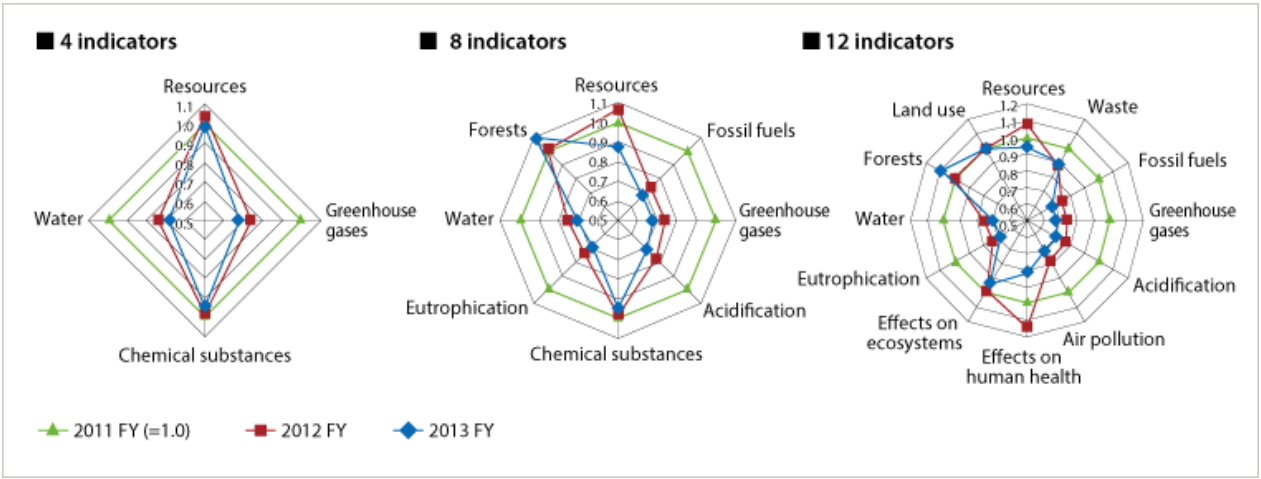
Toshiba Group will use different environmental indicators for different regions in order to appropriately assess local environmental impacts such as air pollution, water contamination, and effects on the conservation of biodiversity. The Japanese version of the Life-cycle Impact assessment Method based on Endpoint modeling (LIME), which the Group currently uses, covers only evaluation coefficients based on data and values in Japan. Cutting-edge research and development are currently being carried out to adapt this method to various regions globally, and we will introduce new evaluation coefficients as soon as they become available.

## Toshiba Group's environmental footprints

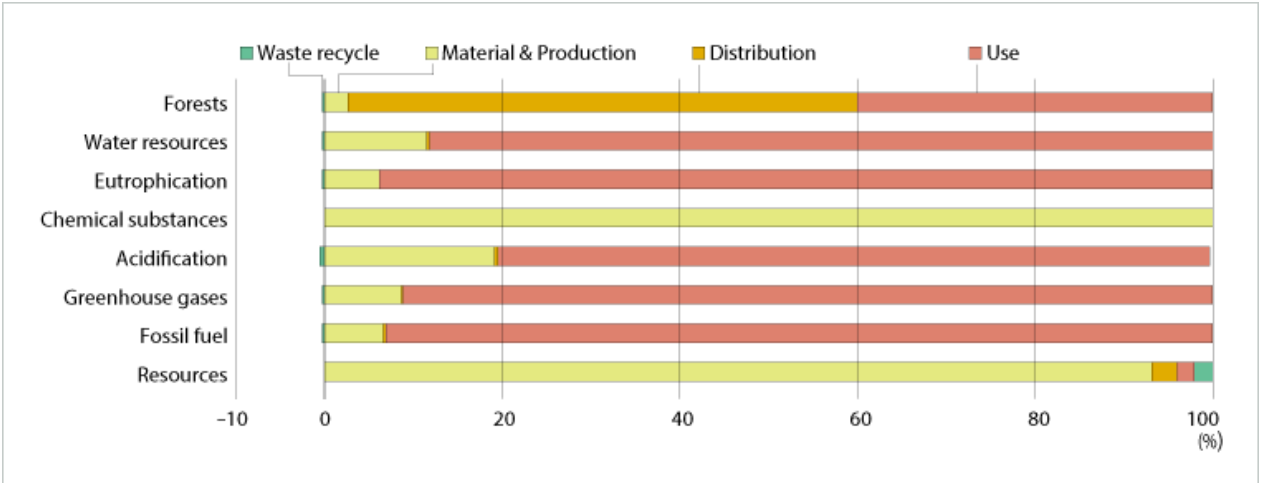
Toshiba Group will analyze the environmental impacts of all its businesses throughout product life cycles in order to identify hot spots. By performing analysis on a trial basis while making the most of the LCA databases it has developed, the Group aims to establish a life-cycle impact assessment method based on the latest discussions about environmental footprints.

Changes in the calculation results will be analyzed annually so that improvement measures can be taken appropriately. Three-year fluctuations from 2011 are shown in the radar charts (for detailed data, refer to the page on “Overview of Environmental Impacts”). In each chart, the value for the base year (FY2011) has been set to 1; if the environmental impacts for a particular domain have been reduced, such values are represented as less than 1. In addition to the energy conservation efforts that have steadily been made since FY2011, these charts indicate that environmental impacts have also continued to fall in the domains of resources and chemicals, where such impacts rose in FY2012.

The percentage for each life cycle phase varies from one domain of environmental impacts to another, and it is important to take effective measures for each domain. In the future, since the trends in environmental footprints also vary from one business area to another, the Group will analyze its environmental footprints per business area.




**Life Cycle**



# Conservation of Biodiversity

**Two years has passed since we transplanted plants damaged by excessive picking onto the premises of Toshiba Group's production site. We have succeeded in artificial breeding, tripling the number of stocks before returning them to their original habitat.**

**Ex-situ conservation promoted by Toshiba Group:**

On the premises of its business sites, Toshiba Group promotes ex-situ conservation (Convention on Biological Diversity* (CBD) Article 9) to protect and artificially breed rare flora and fauna which inhabit the surrounding areas as well as to return them to their original habitats. In May 2012, Toshiba Lighting & Technology Corporation in Yokosuka City accepted 28 stocks of daylily, a lily-family plant that had been picked excessively in the Miura Peninsula's Koajiro forest.

* Measures taken for the recovery and rehabilitation of threatened species and for their reintroduction into their original habitats under appropriate conditions as well as measures taken for the purpose of complementing in-situ measures (as stipulated in Article 8 of the Convention) aiming to conserve such threatened species within their original habitats.


Transplanting of daylilies (May 2012)

Subsequently, we carefully adjusted the watering frequency and fertilizer composition while continuing to monitor the plants' growth. Finally, in August 2012, two stocks came into bloom for the first time.


First daylily that bloomed (August 2012)

However, the purpose of transplanting was to increase the number of stocks, not to grow flowers. So, to provide the plants' roots with nutrients for consumption in order to bloom flowers, we nipped the flowers in the bud.
In managing the plants, we placed the highest priority on growing daylilies; thus, we also removed the lawn covering the soil surface.
In the winter of 2013, the plants were in the state shown in the photograph below. We were seriously concerned that they might have withered.


Daylilies in the winter (February 2013)

In the spring of 2013, however, they sprouted vigorously once again.
In the autumn of 2013, we confirmed that the number of stocks had increased to approximately 60.


Daylilies blooming in the second year (July 2013)

Finally, in May 2014, exactly two years since the first transplanting, we succeeded in increasing the number of stocks to approximately 100 and performed a return ceremony in Koajiro forest.

**Successful breeding increased the original 28 stocks to approximately 100**


**After tripling the number of stocks, returning them to Koajiro forest**




**Flora and fauna in Koajiro forest**






In July 2014, Daylilies which were returned to Koajiro forest came into bloom. They are successfully returning to the wild.


Koajiro forest was opened to the public in July 2014. Daylilies preserved by Toshiba Group are growing on Enoki Terrace. According to our experience in tending the daylilies, they come into full bloom from late July to mid-August. We hope you are able to visit Koajiro forest around that time.

In the future, we plan to share the breeding know-how obtained at Toshiba Light & Technology Corporation with other Toshiba Group production sites, thereby providing Toshiba-grown daylilies to Koajiro forest from a number of different production sites each year.

**Significance of promoting ex-situ conservation in production site environs**

In addition to daylilies, Toshiba Group is promoting ex-situ conservation of rare fish and plant species inhabiting areas around its production sites.

Compared to parks and forests, where government organizations and NPOs promote initiatives to protect rare species, corporate production sites are better insulated from excessive picking or hunting by third parties thanks to more effective security measures; such sites also are at lower risk of feeding damage due to natural predators or invasive alien species. Therefore, corporate production sites share the characteristics of strict nature preserves. We recognize the effects of our land use on ecosystems. At the same time, as part of efforts to protect the diversity of rare species through our new ecosystem conservation initiatives, we will continue to make use of the characteristics of our business and production sites having large areas of land.

## Development of ecological networks

### Establishment of ecosystem networks centered on production sites

Land use is one human activity that has an effect on ecosystems. Residential land and location of factories disrupt wildlife corridors and effect the living environments of plants and animals. Therefore, Toshiba Group aims to establish ecosystem networks that connect production sites with their neighboring areas.

Toshiba calls for employees who cultivate fruits such as yuzu (Citrus junos) and sudachi (Citrus sudachi) in their home gardens to allow some of the larvae of the swallowtail butterflies living on their leaves to grow until they mature into adults rather than eradicating all of them. Toshiba also distributes yuzu seedlings free of charge to employees who want them. We believe that we can contribute to expanding butterflies' habitats by calling them into our employees' home gardens.

| Plants (eaten by butterflies) | Butterflies expected to be called in (example) |
|---|---|
| Yuzu and sudachi (citrons) | Asian swallowtail, spangle, and great Mormon |
| Kumquat | Asian swallowtail, spangle, and Chinese peacock |

Citrons

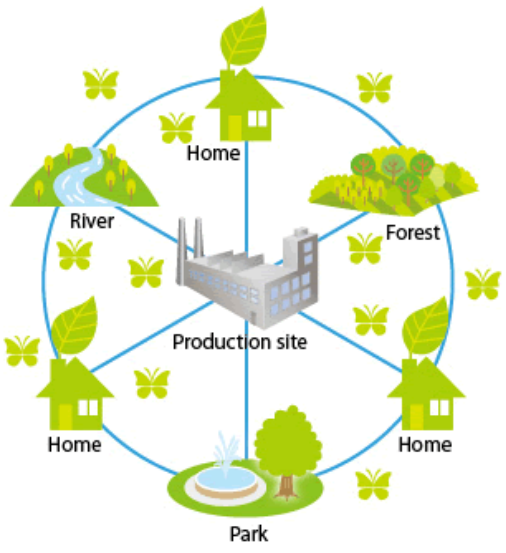
Asian swallowtail (caterpillar)

Asian swallowtail (imago)

Additionally, the company plans to develop yuzu orchards in part of the green space at each of its production sites and make it a shelter for butterfly eggs laid in employees' home gardens and larvae that hatch from the eggs.

In the future, Toshiba aims to minimize the number of larvae eradicated at homes and establish an ecosystem network for butterflies that connects employees' homes, local forests, rivers, parks, and so forth with the company's production sites as its core.

**Establishing a network for butterflies that connects employees' homes, neighboring parks, forests, rivers, and so forth with production sites as its core**



## Example 1: Toshiba Carrier Corporation's Fuji Operation

**Developing an ecological network and practicing ex-situ conservation of rare flora and fauna in a biotope created using factory effluent**

Toshiba Carrier Corporation's Fuji Operation has developed a biotope in an open area on its premises. Using a solar-powered pump, wastewater is drawn from the factory into a pond inhabited by many aquatic species, including killifish, diving beetles and dragonfly larvae. In July 2013, a spot-billed duck and ducklings were seen at the pond.

View of the biotope


Structural diagram of the biotope
Wastewater drawn from the factory into the pond

Many plants have been planted around the pond, including evergreen witchhazels (endangered IB species in Shizuoka Prefecture's red data book), fringed irises (endangered IB species) and hyacinth orchids (near-threatened species).

The biotope is managed by employees of the Fuji Operation with advice from Prof. Michiko Shimoda of Tokoha University's Faculty of Social and Environmental Studies. Local elementary schoolchildren participate in nature observation events held at the biotope.

**Species (examples) observed at Toshiba Carrier Corporation's Fuji Operation Biotope**

Evergreen witchhazel

Killifish

Lesser emperor

Lesser emperor larva

Fringed iris

Hyacinth orchid

Spot-billed duck and ducklings

**Nature observation event in which elementary schoolchildren participated**

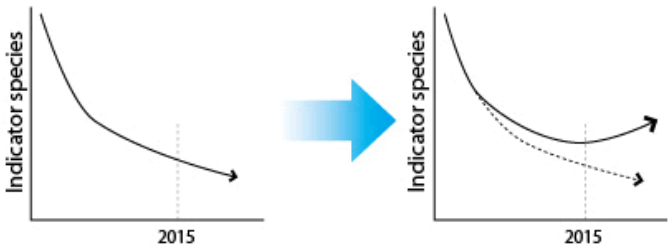
## Medium-term plan for the Conservation of Biodiversity

### 2015 target

Toshiba Group aims to minimize the adverse effects of its business activities on biodiversity and shift its biodiversity policy toward initiatives for improvement to realize an ideal state of environmental management in 2015.

These efforts aim to stop the decreases in the kinds of biodiversity that each site has decided to protect by 2015 and allow for such biodiversity to increase in subsequent years.

**Minimizing Adverse Effects and Increasing Biodiversity (Conceptual Diagram)**

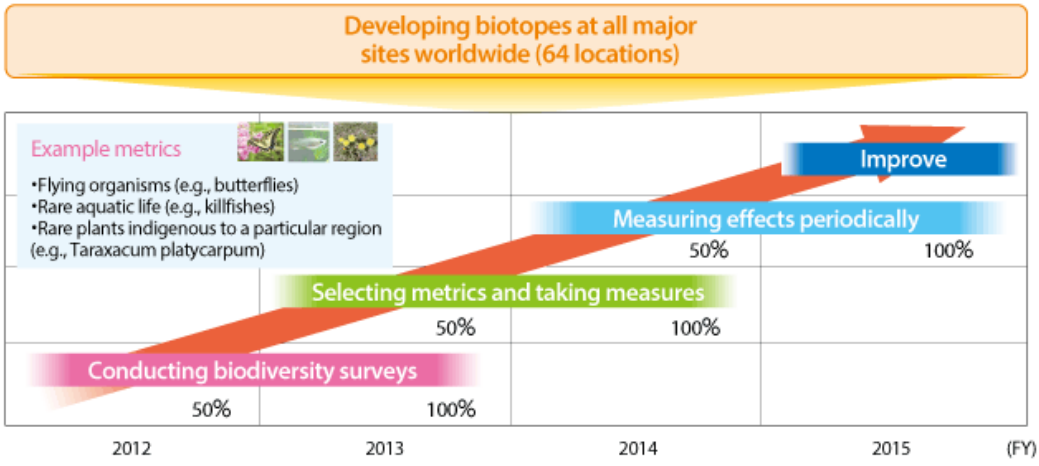



The global Aichi Biodiversity Targets adopted at the Tenth Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP10) held in Nagoya City, Aichi Prefecture, in October 2010 require all signatories to start increasing biodiversity by 2020.

Toshiba Group plans to achieve the Aichi Biodiversity Targets about five years ahead of schedule.

### Medium-term plan for the period up to 2015

To achieve the 2015 target, Toshiba Group aims to develop biotopes at 64 of its business and production sites worldwide.



Development of biotopes will be promoted in three steps: biodiversity surveys, selection of metrics and measurement of effects. Biodiversity surveys consist of investigations of living organisms and "red lists" in the environs of business sites, explorations of biodiversity by experts, and assessments of biodiversity potential at such sites and in neighboring areas.

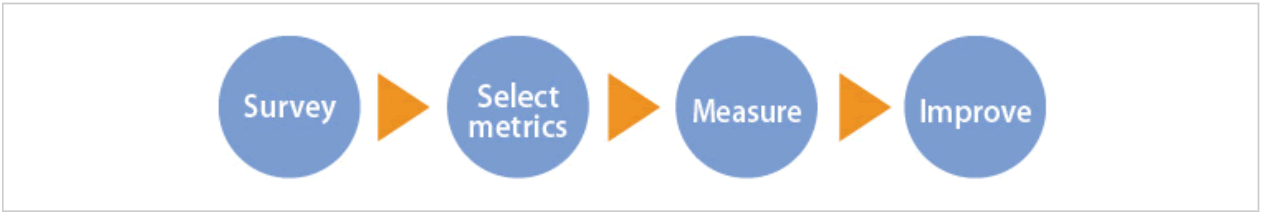
Based on this survey data, Toshiba Group will select living organisms to serve as metrics, take measures to protect and increase them, and make periodic measurements of effects, thereby verifying the appropriateness of the biotope development process. Under the medium-term plan, the Group will take these steps at a minimum of 32 of its sites (50%) each year.

**Medium-term plan**

| FY2012 | FY2013 | FY2014 | FY2015 |
|---|---|---|---|
| 50% of sites surveyed | 100% of sites surveyed 50% of sites have selected metrics | 100% of sites have selected metrics 50% of sites have measured effects | 100% of sites have measured effects |

*50% = 32 or more sites

**Steps in biotope development**




| | |
|---|---|
| Survey | Investigate organisms living on the premises; investigate IUCN and local area Red Lists; onsite inspection by local experts; assessment of biodiversity potential for targeted and neighboring areas. |
| Select metrics | Select relevant metrics on the basis of investigation data; devise measures to protect and expand the selected metrics. |
| Measure | Measure the metrics on a periodic basis. Examples of measurement targets: Number of species of animals, number of animals within each species, number of plant roots, size of planting area. |
| Improve | Improvement or enhancement in metrics achieved as a result of periodic measuring. |

## Results for FY2013

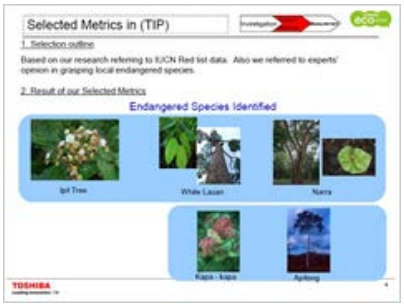
In FY2012 and FY2013, we completed biodiversity surveys at 64 eligible sites. Further, based on these survey results, we selected metrics at 58 sites. As a result, the percentage of sites for which metrics had been selected reached 91% in FY2013 (plan goal: 50%). We will gradually carry out biodiversity protection activities at all sites, including the remaining six sites.

| Region | Eligible sites | % of sites surveyed | No. of sites where metrics have been selected | % of sites where metrics have been selected |
|---|---|---|---|---|
| Japan | 45 | 100% | 42 | 93% |
| China | 10 | | 10 | 100% |
| Asia | 5 | | 3 | 60% |
| Americas | 2 | | 2 | 100% |
| Europe | 2 | | 1 | 50% |
| Total | 64 | 100% | 58 | 91% |

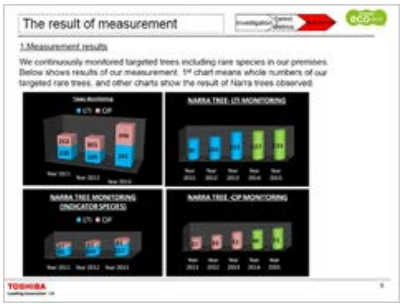
### Development of a Biodiversity Conservation Database

We have created a biodiversity conservation database containing data from the 64 production sites targeted by the Fifth Environmental Action Plan in order to share information among all group companies. We use the same format in Japan and overseas so that we can share information about progress and activities in three stages (survey, metrics selection and measurement) at individual sites.

Survey




Metrics selection




Measurement

## Toward mainstreaming biodiversity

### Current state of initiatives for mainstreaming biodiversity

Since the need to conserve biodiversity is less well known than the needs to address climate change and waste management, efforts are underway to make biodiversity conservation a mainstream part of environmental activities*1 around the world. Internationally, mainstreaming focuses on strategic goal A of the Aichi Biodiversity Targets adopted at COP10 in 2010. At the same time, national mainstreaming strategies are being formulated in countries around the world. In Japan, government organizations and private groups are hosting seminars, educational events and awards programs for companies and the public at large. Despite such efforts, results of various questionnaire surveys suggest that not much progress in mainstreaming has been made*2.

*1 "Mainstreaming" means that the importance of biodiversity conservation and sustainable utilization of biodiversity is widely recognized by national and local governments, business operators, NPOs and the public at large and is reflected in their activities (2013 Annual Report on Biodiversity).

*2 According to the FY2012 Survey on Initiatives Implemented by Business Operators for Biodiversity Conservation conducted by the Ministry of the Environment, only 12% of companies surveyed (approximately 2,600 companies having 500 or more employees) knew of and were using the Guidelines for Private Sector Engagement in Biodiversity, while 25% of them knew of the Aichi Biodiversity Targets. The percentage of such recognition among all companies in Japan is likely to be even lower.

**Mainstreaming under the Aichi Biodiversity Targets**

| | | |
|---|---|---|
| Aichi Biodiversity Targets | **Strategic Goal A**<br>Address the underlying causes of biodiversity loss by **mainstreaming** biodiversity across government and society | Target 1 |
| | | Target 2 |
| | | Target 3 |
| | | Target 4 |
| | **Strategic Goal B**<br>Reduce the direct pressures on biodiversity and promote sustainable use | Target 5 |
| | | Target 6 |
| | | Target 7 |
| | | Target 8 |
| | | Target 9 |
| | | Target 10 |
| | **Strategic Goal C**<br>To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity | Target 11 |
| | | Target 12 |
| | | Target 13 |

| | | |
|---|---|---|
| | **Strategic Goal D**<br>Enhance the benefits to all from biodiversity and ecosystem services | Target 14 |
| | | Target 15 |
| | | Target 16 |
| | **Strategic Goal E**<br>Enhance implementation through participatory planning, knowledge management and capacity building | Target 17 |
| | | Target 18 |
| | | Target 19 |
| | | Target 20 |

## Review of factors that prevent mainstreaming: Starting with the classification of ecosystem services

Biodiversity conservation aims to allow human beings to sustainably use the ecosystem services provided by nature. Ecosystem services are classified into provisioning services, regulating services, cultural services, and so on.

**Ecosystem services**

| | | |
|---|---|---|
| Ecosystem services | (1) Provisioning services | Physical supply of food, water, wood, fuel, etc. |
| | (2) Regulating services | Decomposition of waste, purification of water and regulation of climate |
| | (3) Cultural services | Recreation as well as mental, cultural and intellectual benefits |

Maintenance and improvement of provisioning and regulating services require protecting Mother Nature. Therefore, events for citizens often focus on large-scale nature conservation activities, such as tree planting and community forest conservation.

Nevertheless, so far there has been little progress in mainstreaming biodiversity. One reason for this is that current biodiversity conservation activities mainly target provisioning and regulating services. Tree planting and community forest conservation require participants to visit remote natural environments on holidays. The repeat rate for such activities is extremely low. Also, corporate citizenship activities such as these cost time and money, imposing considerable burdens on companies. Furthermore, worsening financial conditions sometimes make it difficult to continue CSR and corporate citizenship activities.

In other words, in order to promote mainstreaming of biodiversity at the corporate and citizen levels, it is more important to develop activities that allow participants to come into daily contact with the natural environments familiar to them. To this end, improvement in cultural services in urban areas is likely to be more effective. For example, activities developed on factory premises to contribute to cultural services can be continued as long as the factory is in operation.

## Toshiba Group's contributions to mainstreaming

Toshiba Group's biodiversity conservation activities aim to contribute to cultural services; the activities focus on simple daily activities that can be carried out by employees and their families in collaboration with residents of the local community.

By improving cultural services in areas around factories, we aim to promote changes in local residents' awareness, including that of employees, as well as to contribute to mainstreaming biodiversity. Participants in our activities have made various comments, such as that they started to record the behavior of swallowtail butterflies and that they had not known a particular species of fish was endangered. Such comments indicate that our activities are gradually achieving their objectives.

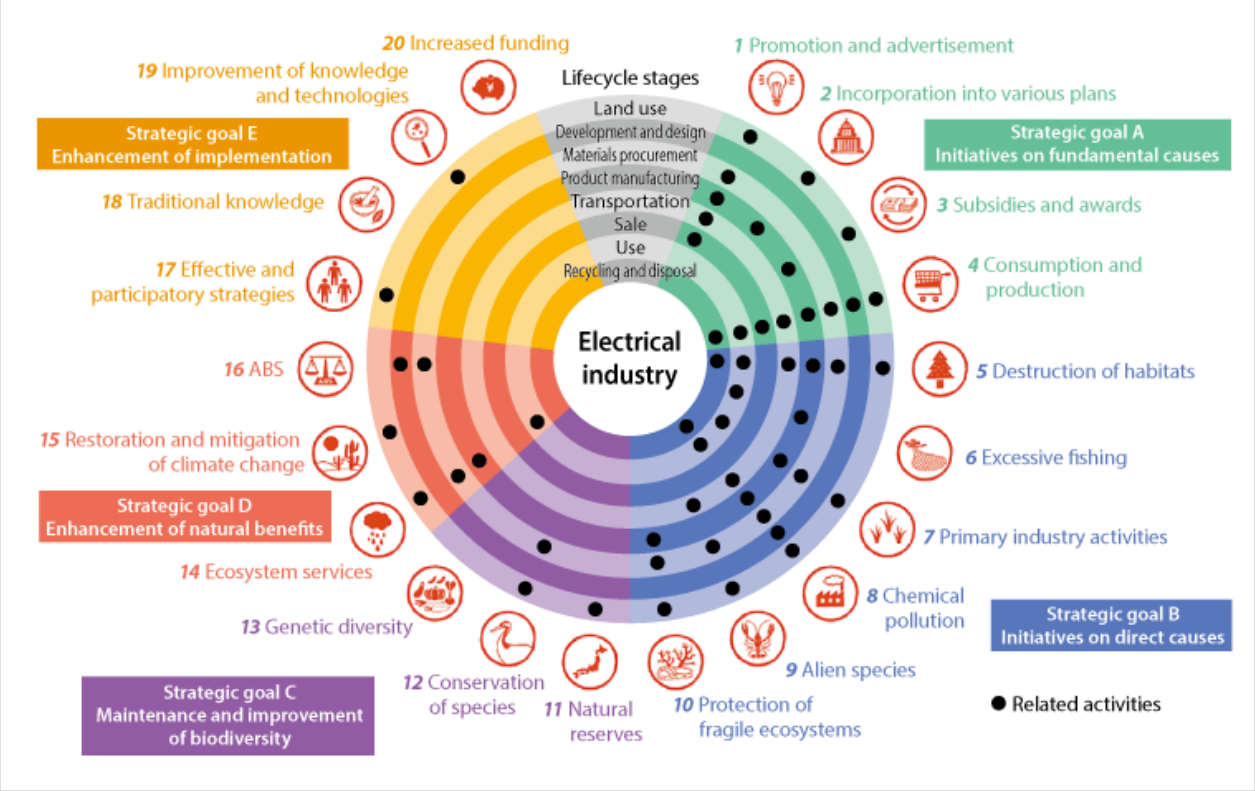
In addition, the activities promoted by Toshiba Group for the Development of Ecosystem Networks around Factories and for Ex-situ Conservation of Rare Flora and Fauna are designed to promote activities that contribute to improving biodiversity using simple but effective methods. Since such methods do not require time or money, these activities can be undertaken by various companies, including small- and medium-size enterprises. In the future, we plan to develop wide-area activities involving collaboration among companies.

## Toward the achievement of the Aichi Biodiversity Targets

The Four Electrical and Electronic Associations* Biodiversity Working Group, of which Toshiba Group is a member, reviewed the relationship between electrical and electronic companies' activities for environmental and biodiversity conservation and the Aichi Biodiversity Targets, which needs to be achieved at the global level. Review results were published in April 2014; the results indicate that activities developed by electrical and electronic companies are relevant to 17 of the 20 specific goals.

* Four Electrical and Electronic Industry Associations in Japan: The Japan Electrical Manufacturers' Association (JEMA), Communications and Information Network Association of Japan (CIAJ), Japan Electronics and Information Technology Industries Association (JEITA) and Japan Business Machine and Information System Industries Association (JBMIA)

**Relationship between electrical and electronic companies' activities and the Aichi Biodiversity Targets**

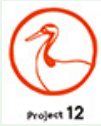



Quoted from the Four Electrical and Electronic Associations Biodiversity Working Group LSB

Based on the review, we examined the relationship between Toshiba Group's programs and the Aichi Biodiversity Targets. As a result, we found that our programs are relevant to 10 of the 20 specific goals. The table below summarizes the current state of the relevant programs.

We will continue our biodiversity conservation activities with a view to contributing to the achievement of the Aichi Biodiversity Targets.

**Relationship between Toshiba Group's Business Activities and the Aichi Biodiversity Targets**

| Aichi Biodiversity Targets goal related to Toshiba Group's business activities* | | Toshiba Group initiatives |
|---|---|---|
|  Target 1 | By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably. | Incorporation into the Fifth Environmental Action Plan<br>Distribution of information through environmental reports and company websites<br>In-house education through e-learning, the Biodiversity Guidelines, etc. |
|  Target 2 | By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems. | Formulation of the Fifth Environmental Action Plan, the Basic Policy for the Environment, the Biodiversity Guidelines, etc. |
|  Target 4 | By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits. | Promotion of reduced environmental impact in business processes |
|  Target 5 | By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced. | Utilization of FSC-certified paper and the Forest Neighborhood Association<br>Planting trees through the 1.5 Million Tree-Planting Project, etc.<br>Implementing measures starting from production sites where it is possible to develop ecosystem networks |
|  Target 8 | By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity. | Promotion of proper management of chemicals |
|  Target 9 | By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment. | Implementation of measures to exterminate alien species on factory premises and in areas around factories |
|  Target 10 | By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning. | Promotion of measures to mitigate climate change, effective use of resources, and proper management of chemicals |
|  Target 12 | By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained. | Improvements related to daylilies, Japanese eight-barbed loaches and *Mikekado* pumpkins |
|  Target 15 | By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification. | The tree-planting rate exceeds 15% at Toshiba Group's individual production sites. However, some of the green land are not contributing to the recovery of the ecosystem. |
|  Target 19 | By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied. | Use of the honeycomb rib structure in notebook PCs<br>Focusing attention on trends identified by The Economics of Ecosystems and Biodiversity (TEEB) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) |

* Goals 3, 6, 7, 11, 13, 14, 16, 17, 18 and 20 were deemed irrelevant.

* The icons of each goal were downloaded from “Nijyu-maru Project (A new window will open.)” Website

# Environmental Vision 2050

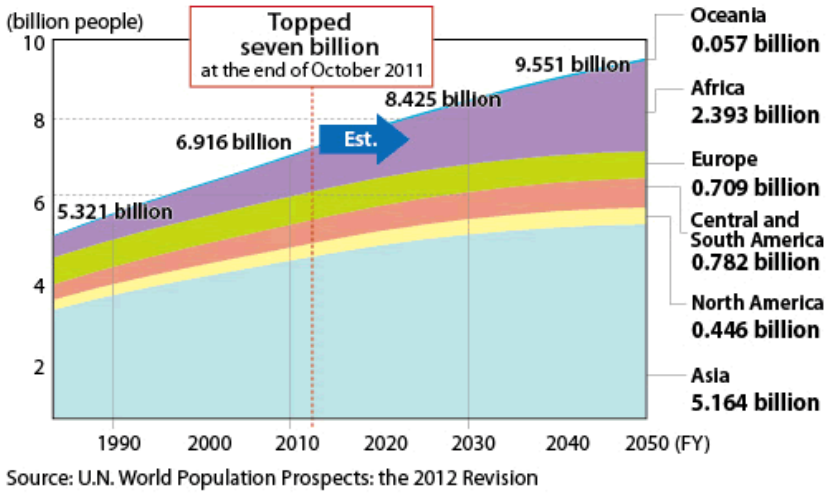

Toshiba Group, aiming to become one of the world's foremost eco companies, continues to ask how mankind should live in the future and what role we should play in society and for the Earth. As solutions for various environmental issues, including climate change, are called for, Toshiba Group has developed Environmental Vision 2050 to ensure that these environmental issues are solved and that all people can lead affluent lifestyles in harmony with the Earth. With the DNA of Toshiba Group, we endeavor to contribute to society with passion and determination and will create new value through revolutionary innovations.

## Environmental Vision 2050

The world population topped seven billion in October 2011, and rapid population growth and the urbanization of populations are expected to continue to occur mainly in the emerging countries of Africa, Asia and other regions. As a result, food, water, and energy shortages; decreases in the consumable resources such as fossil fuels, metals, and minerals that support today's society; climate change; and other problems are having global effects as a result of their complicated, intricate relations with one another. We must address these issues urgently.

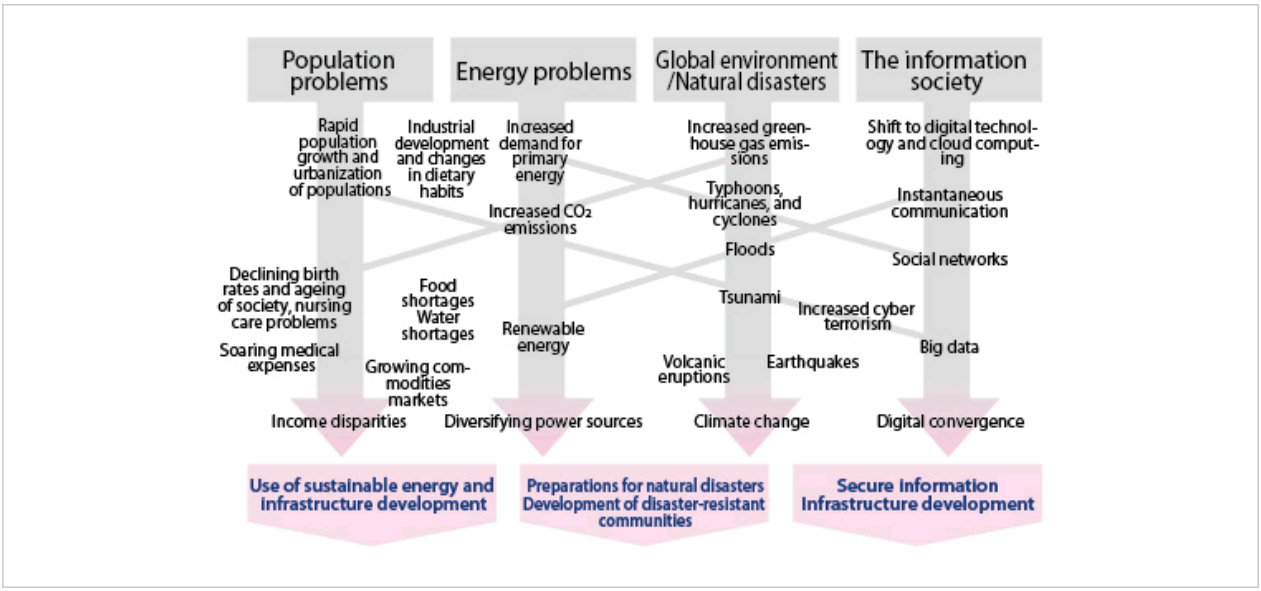
Toshiba Group has developed Environmental Vision 2050, a corporate vision that envisages affluent lifestyles in harmony with the Earth as an ideal situation of mankind in 2050, and will work to realize this vision.

**Changes in the World Population (Estimates)**




Source: U.N. World Population Prospects: the 2012 Revision

**Mega-trends in Environmental Changes**

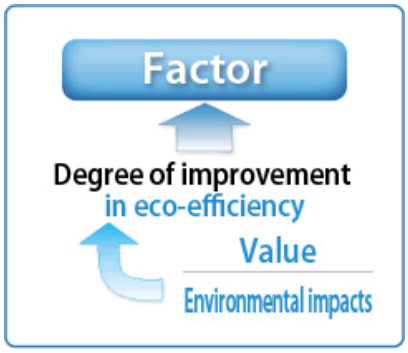



Throughout the life cycle of products from manufacture and use to recycling and reuse, Toshiba Group will strive to provide safer and more comfortable lifestyles and create enriched value for customers. The Group will also strive for harmony with the Earth by working to mitigate climate change, using resources efficiently, and managing chemicals properly in order to reduce environmental impact.


## Performance indicators for our Vision

Based on the concept of "eco-efficiency, we have set goals to ensure that all people can lead affluent lifestyles in harmony with the Earth.

Eco-efficiency can be expressed as a fraction, with the creation of new value as the numerator and environmental impacts as the denominator. The more enriched value created—or the more environmental impact is reduced and progress made toward coexisting with the Earth—the more eco-efficiency improves. We call the degree of improvement in eco-efficiency the "Factor," and increasing the Factor leads to affluent lifestyles in harmony with the Earth.



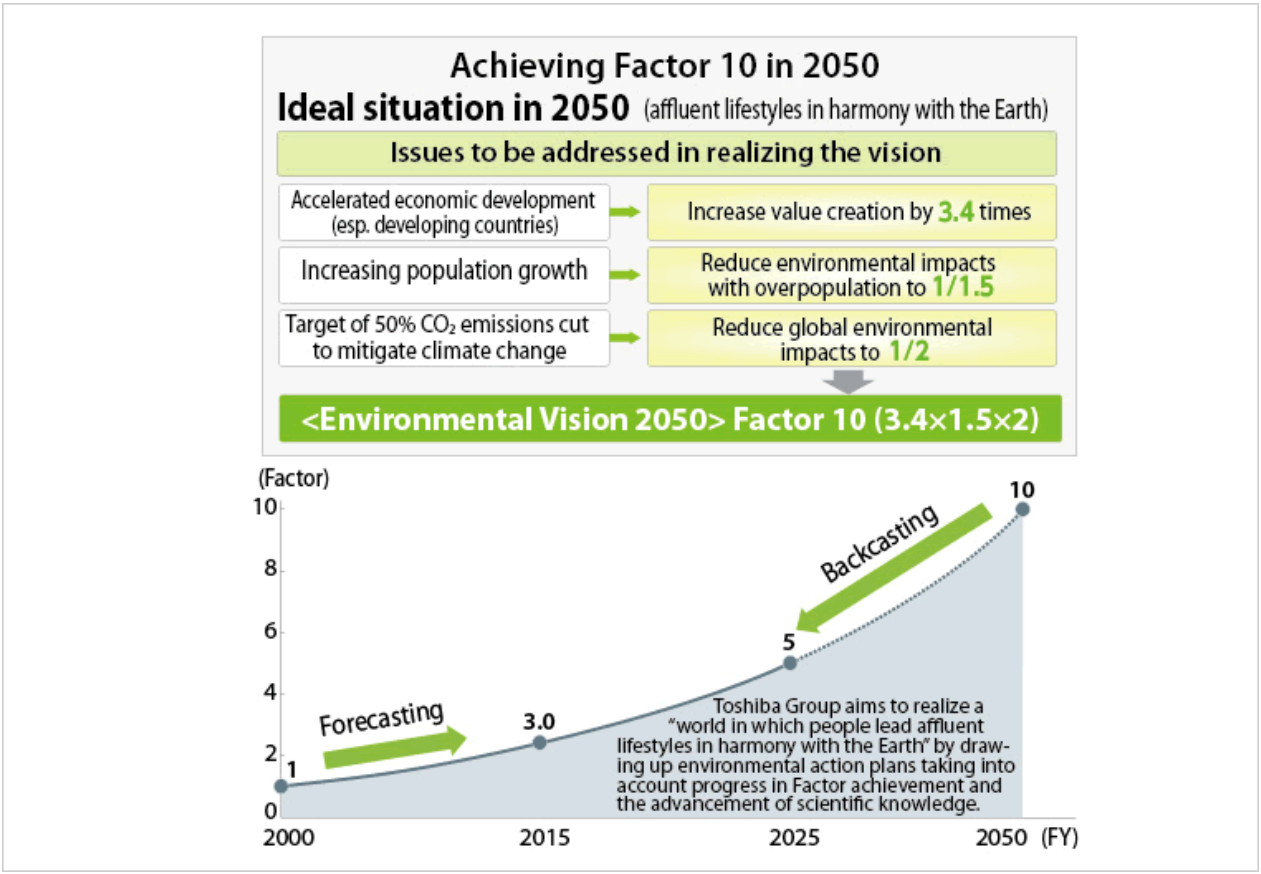
Based on several predictions about the future shapes society may take, we examined how much we need to raise the Factor by 2050.

It is assumed that the gross domestic product (GDP) of a country reflects value that its people can enjoy. According to the Organisation for Economic Co-operation and Development (OECD), the world's average GDP per capita is expected to grow **3.4** times by 2050.

It is also expected that the world population will increase by **1.5** times as compared to 2000 by 2050. And at the 15th Conference of the Parties to the U.N. Framework Convention on Climate Change, participants emphasized that it is necessary to reduce greenhouse gas emissions **by half** by 2050.

If the three points cited above are taken into account, the required degree of improvement in eco-efficiency (Factor) in the world in 2050 is 10.2 (3.4 × 1.5 × 2). The Toshiba Group Environmental Vision 2050 requires that the Group globally achieve Factor 10 by 2050. In consideration of the above, a long-term goal has been set by backcasting from the ideal situation in 2050. (See the graph below.)

At the same time, for FY2015, the final year of the Fifth Environmental Action Plan which began in FY2012, achieving Factor 3.0 has been set as a stretch goal based on current initiatives through forecasting.




### Targets for Environmental Vision 2050

- It is necessary to increase the world's eco-efficiency by 10 times as compared to the FY2000 level by FY2050 (Factor 10).
- It is necessary to make improvements to reach at least Factor 3.0 in FY2015, the target year of the Fifth Environmental Action Plan.

## "Toshiba eco style" logo

As a symbol of Toshiba's environmental management which aims to ensure that all people can live affluent lifestyles in harmony with the Earth, we have established “Toshiba eco style” logo. We will promote at a global scale to have our eco-conscious products help create richer, more diverse lifestyles for individuals while reducing impacts on the global environment.

Symbol of Toshiba Group’s environmental management “Toshiba eco style”

# Toward the Establishment of a Position as the World's Foremost Eco-company

**Toshiba aims to become the world's foremost eco-company based on the Environmental Grand Design and T-COMPASS, a new concept of environmental management.**

## We will establish performance areas that should be achieved and endeavor to integrate business administration and environmental management through the four strategies.

Toshiba Group has formulated the Environmental Grand Design to establish its position as the world's foremost eco-company in FY2015. This Grand Design consists of six performance areas that should be achieved by FY2015 and four environmental strategies toward this end. First, under the strategy to expand ECPs*, we will promote the sale of products having the highest level of environmental performance (Excellent ECPs) to contribute to the realization of sustainable societies.

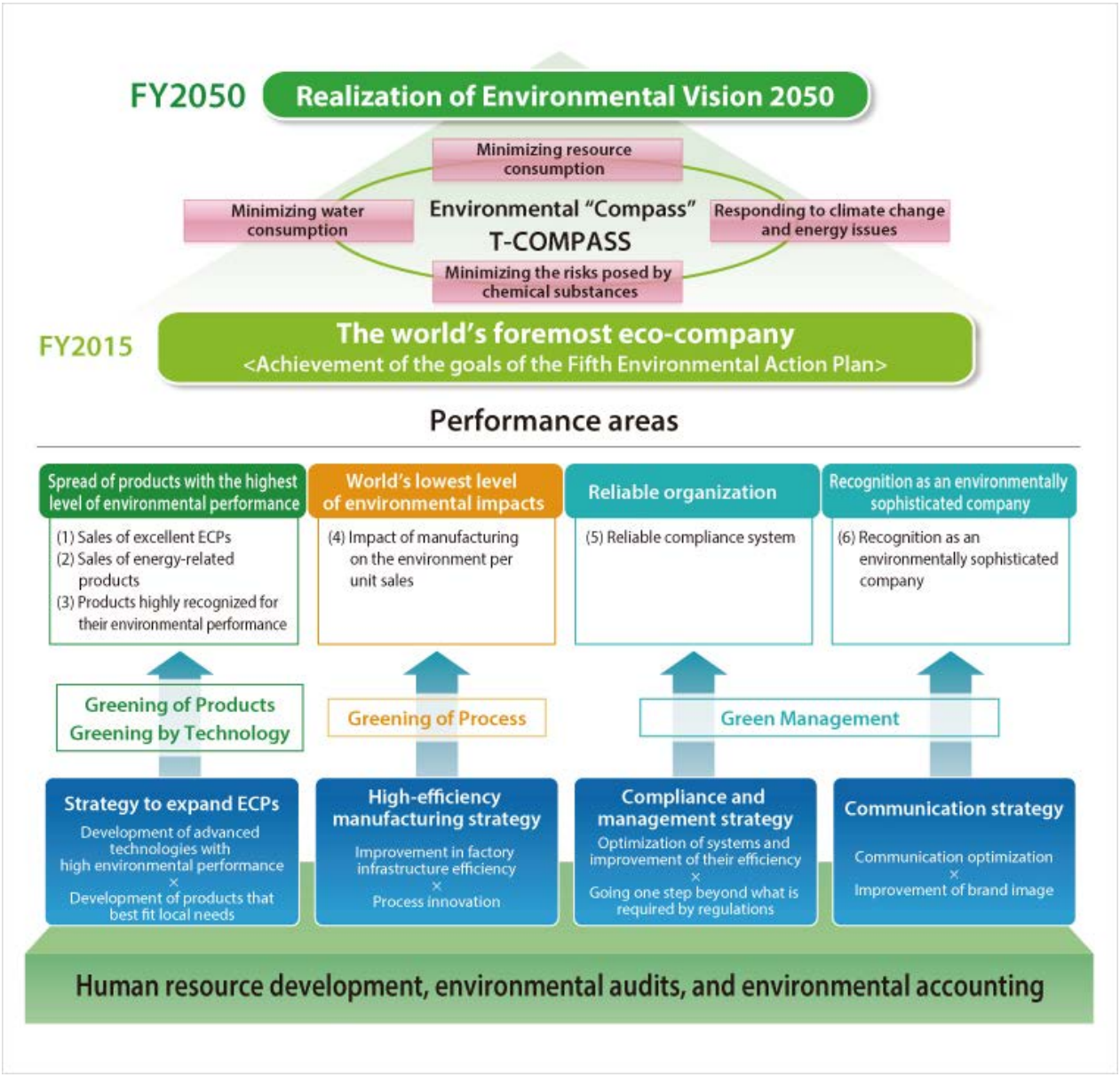
Second, under the high-efficiency manufacturing strategy,we will strive to realize manufacturing having the world's lowest level of environmental impact.

Third, under the compliance and management strategy, we will promote the development of a reliable organization to strengthen the foundation of our environmental management.

Fourth, through our communication strategy we will strive to increase the visibility of Toshiba as an environmentally sophisticated company.

In addition, to prepare for the future, we have introduced T-COMPASS, a new concept of environmental management. With this concept, we will achieve greater integration of business operations and environmental management by focusing on our supply chain and multiple environmental areas (multiple criteria) in accordance with new global trends.

* ECPs: Environmentally Conscious Products




**We have developed the Fifth Environmental Action Plan. We will achieve this plan through four "Green" initiatives.**

## Stepping up environmental management by introducing product sales management and total environmental impact controls

Toshiba Group has formulated the Fifth Environmental Action Plan to develop specific actions based on four strategies. More specifically, we are implementing four “Green” initiatives: Greening of Products, Greening by Technology, Greening of Process and Green Management. In order to achieve great integration of business management and environmental management, we have established specific goals to achieve continuous business growth and reduce environmental impacts; we are now taking action to attain these goals.

### Greening of Products

The Greening of Products initiative aims to create products having the highest level of environmental performance. Under this initiative, we manage products' environmental performance using performance indicators such as sales of products, reductions in product-derived $CO_2$ emissions, the percentage of recycled plastics used, and reductions in the use of specified chemical substances. We will strive to increase sales of excellent ECPs to 1.8 trillion yen in FY2015, approximately six-fold compared to the FY2011 level, and to reduce $CO_2$ emissions by 15 million tons.

## Greening by Technology

The Greening by Technology initiative aims to expand the application of advanced low-carbon technologies globally in order to contribute to providing a stable power supply and mitigating climate change. Under this initiative, we manage environmental performance through performance indicators such as sales and reductions in $CO_2$ emissions. In FY2015, Toshiba Group will increase sales of energy-related products concerning various types of power generation (e.g., thermal and wind power) to 1.9 trillion yen, about 1.5 times the FY2011 level. The Group will also reduce $CO_2$ emissions by 490 million tons.

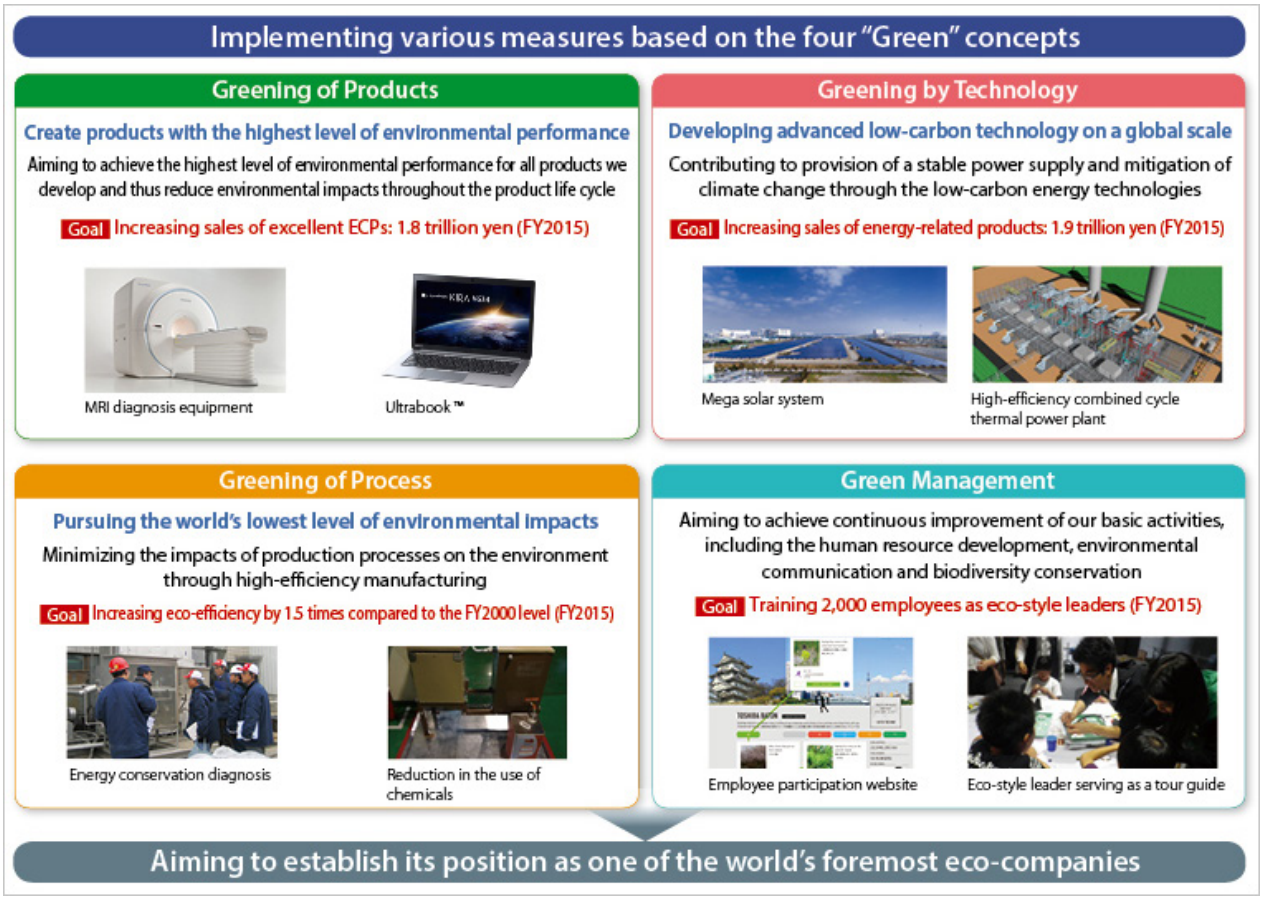
## Greening of Process

The Greening of Process initiative aims to realize high-efficiency manufacturing. Under this initiative, we manage performance indicators on both “per unit production” and “total volume” basis. Leading toward FY2015, we aim to achieve the world's lowest level of environmental impact through high-efficiency manufacturing, in which we simultaneously reduce costs and environmental impacts (greenhouse gases, waste materials, chemical substances, wastewater discharged from production sites, etc.).

## Green Management

The Green Management initiative aims to continuously enhance the foundation of our environmental management, such as developing the human resources that lead our environmental initiatives, upgrading our environmental management, and promoting better environmental communication. Under this initiative, we focus on three performance indicators: conservation of biodiversity, environmental education and human resource development, and environmental communication. We will ensure that each and every Toshiba employee becomes aware of the need to participate in environmental management, and in FY2015, we plan to promote “Global Environmental Action” with the participation of all Toshiba employees worldwide.

Through these initiatives, Toshiba aims to establish its position as one of the world's foremost eco-companies by 2015 by achieving greater integration between business operations and environmental management.



# Progress in the Fifth Environmental Action Plan

**Toshiba Group achieved its annual goal for overall eco-efficiency by reaching its eco-efficiency goals in two areas: products and business processes.**

## In FY2013, we achieved our annual goal for overall eco-efficiency

In order to realize an ideal state of environmental management in 2050, Toshiba Group formulates environmental action plans and manages specific environmental activities and their targets in accordance with these plans. Since we formulated our first environmental action plan in FY1993, the Group has expanded its scope of environmental activities and governance. In the Fifth Environmental Action Plan, which covers the period from FY2012 to 2015, we are working on 22 activity items. The Environmental Vision 2050 requires the Group to increase the degree of improvement in overall eco-efficiency by ten times (Factor 10) by 2050 and by five times (Factor 5) by 2025. In FY2013, taking these requirements into consideration, the Group worked to achieve its goal of increasing the degree by 2.7 times (Factor 2.7). As a result, we increased product eco-efficiency in FY2013 by 3.04 times (target: 3.0 times) compared to the FY2000 level thanks to continued progress in creating value and reducing environmental impact mainly in the area of system solution products. We improved business process eco-efficiency by 1.48 times (target: 1.44 times) because of reductions in greenhouse gas emissions through energy conservation investments and energy conservation diagnosis. Thus, Toshiba Group exceeded its targets in both areas and succeeded in improving overall eco-efficiency, which combines these two types of eco-efficiency, by 2.72 times, more than our target of 2.7 times.

▲ To Top

## Achieved Status of the Fifth Environmental Action Plan

The table summarizes the progress made in FY2013 with respect to the Fifth Environmental Action Plan. During FY2013, Toshiba Group achieved its goals for 19 of the 22 items in the Plan.

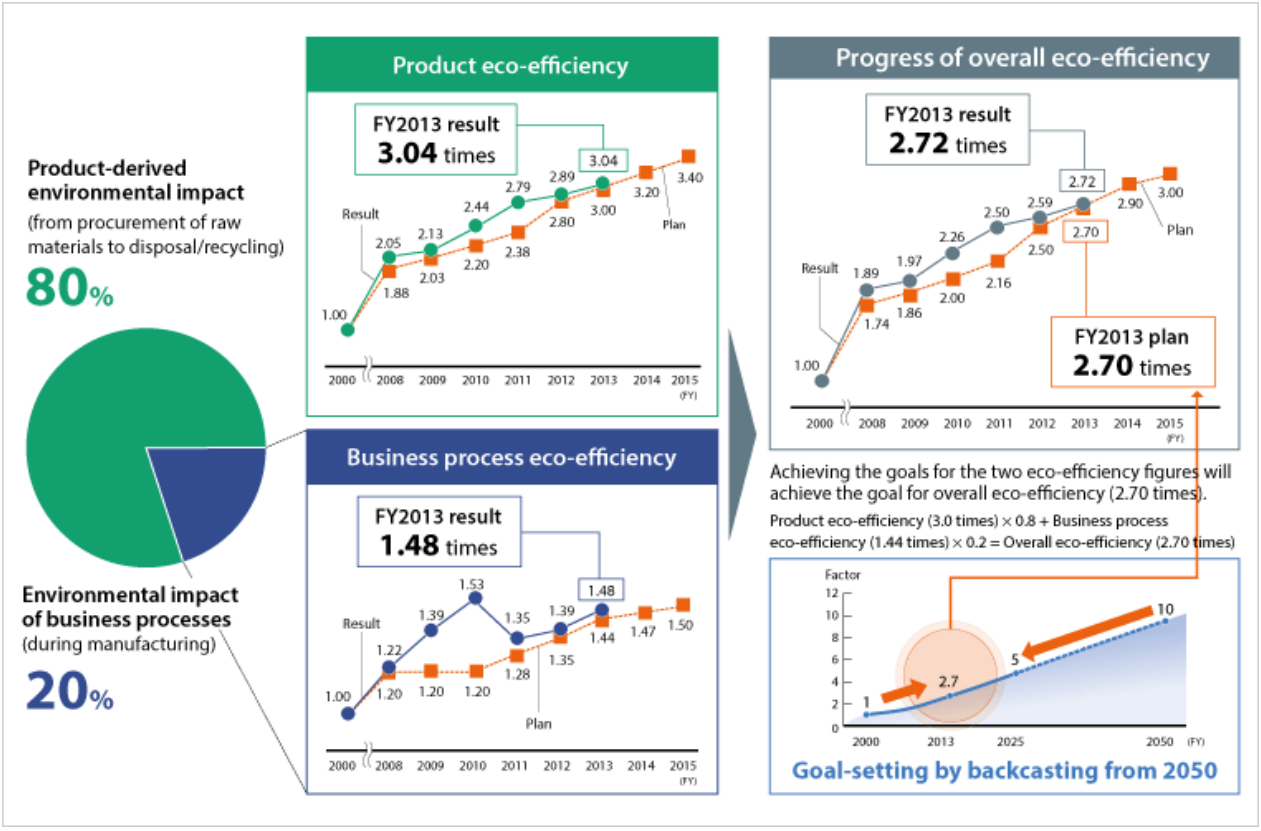
In the Greening of Products and Greening by Technology initiatives, we achieved our goals for five of the seven items. In particular, sales of excellent ECPs were 1.6 trillion yen, twice as much as initially planned. On the other hand, progress in the energy-related business was delayed because energy demand did not grow as initially planned.

In the Greening of Process initiative, we achieved our goals for eight of the nine items. We achieved our goal of reducing total greenhouse gas emissions mainly by making energy conservation investments; conducting energy conservation diagnosis globally; taking measures to conserve electricity used for air conditioning, lighting, etc.; and monitoring power consumption more closely on an ongoing basis. Progress in reducing the percentage of final waste disposal was delayed because the development of recycling initiatives at our overseas business and production sites was not as active as initially planned.

In the Green Management initiative, we achieved our goals for all three items. We obtained satisfactory results for our new initiatives. Specifically, to conserve biodiversity, we effectively used our business and production sites to protect rare flora and fauna. In terms of environmental education and human resource development, we trained employees as Toshiba eco-style leaders. To promote environmental communication, we developed the Toshiba Group Global Environmental Action project.

In FY2014, we aim to achieve all goals for the year by accelerating global business development in the energy sector and placing strict controls on waste management.

**Progress of overall eco-efficiency**




## Toshiba Group's Fifth Environmental Action Plan

| Eco-efficiency | FY2013 | | | FY2014 | FY2015 |
|---|---|---|---|---|---|
| | Goal | Result | Evaluation | Goal | Goal |
| Improvement of overall eco-efficiency (compared to FY2000 level) | 2.7 times | 2.72 times | Achieved | 2.9 times | 3.0 times |
| Improvement of product eco-efficiency (compared to FY2000 level) | 3.0 times | 3.04 times | Achieved | 3.2 times | 3.4 times |
| Improvement of business process eco-efficiency (compared to FY2000 level) | 1.44 times | 1.48 times | Achieved | 1.47 times | 1.5 times |

| Greening of Products/Greening by Technology | | FY2013 | | | FY2014 | FY2015 |
|---|---|---|---|---|---|---|
| | | Goal | Result | Evaluation | Goal | Goal |
| Overall | Increasing sales amounts of Excellent ECPs (Greening of Products/Greening by Technology) | 0.8 trillion yen | 1.6 trillion yen | Achieved | 1.5 trillion yen | 1.8 trillion yen |
| | | Sales of system solution products and other certified products increased. | | | | |
| | Increasing sales amounts of energy-related products (Greening by Technology) | 1.49 trillion yen | 1.47 trillion yen | Not achieved | 1.66 trillion yen | 1.9 trillion yen |
| | | We fell slightly short of the goal. We will step up efforts to increase sales of these products globally. | | | | |
| Mitigation of climate change | Reduction of $CO_2$ emissions through eco-products*1 (Greening of Products) | 9 million tons | 10.39 million tons | Achieved | 12 million tons | 15 million tons |
| | | We improved the energy-saving performance of air conditioning and lighting devices. | | | | |
| | Reduction of $CO_2$ emissions through energy-related products*2 (Greening by Technology) | 460 million tons | 444 million tons | Not achieved | 480 million tons | 490 million tons |
| | | We could not achieve the goal because the start of operation of a plant under construction was delayed. We will promote use of high-efficiency thermal power generation and renewable energy. | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Efficient use of resources | Resource savings for products*3 | 35% | 70% | Achieved | 43% | 50% |
| | | We made progress in areas such as making LCD TV sets flatter and lighter as well as increasing the capacity of magnetic disks. | | | | |
| | Increasing the use of recycled plastics for products*4 | 2.80% | 6.20% | Achieved | 2.90% | 3.00% |
| | | We made progress in using recycled plastic components for refrigerators, etc. | | | | |
| Management of chemicals | Reduction of specified chemical substances contained in products*6 (reduction of PVC*5 /BFRs*5 ) | 30 product groups | 32 product groups | Achieved | 50 product groups | Total 80 product groups |
| | | We achieved the goal by reducing use of PVC and BFRs mainly in social infrastructure products. | | | | |

| Greening of Process | | FY2013 | | | FY2014 | FY2015 |
|---|---|---|---|---|---|---|
| | | Goal | Result | Evaluation | Goal | Goal |
| Mitigation of climate change | Reduction in total greenhouse gas emissions*7 (Compared to FY1990 level) | 3.92 million tons <60%> | 2.76 million tons <41%> | Achieved | 4.19 million tons <62%> | 4.39 million tons <65%> |
| | | We made improvements by actively promoting energy conservation investments and energy conservation diagnosis. | | | | |
| | Improvement of total energy-derived $CO_2$ emissions per unit production*8 (Compared to FY2010 level) | 94% | 86% | Achieved | 92% | 90% |
| | | We made improvements by actively promoting energy conservation investments and energy conservation diagnosis. | | | | |
| | Improvement of total $CO_2$ emissions resulting from product logistics per unit production (Compared to FY2010 level) | 97% | 88% | Achieved | 96% | 95% |
| | | We made improvements by improving load factors and restructuring logistics centers. | | | | |
| Efficient use of resources | Reduction in waste volumes (Compared to FY2000 level) | 112,000 tons <59%> | 84,000 tons <45%> | Achieved | 116,000 tons <62%> | 117,000 tons <62%> |
| | | More waste was turned into valuables due to all-out efforts to sort it upon discharge. | | | | |
| | Improvement of the total volume of waste generated per unit production (Compared to FY2010 level) | 96% | 96% | Achieved | 93% | 90% |
| | | We made improvements on a "per unit production" basis thanks to manufacturing process reforms. | | | | |
| | Reduction in the percentage of final waste disposal (Compared to the total volume of waste generated by Toshiba Group) | 1.5% | 1.6% | Not achieved | 1.0% | 0.5% |
| | | The development of our recycling initiatives at overseas business and production sites was not as active as initially planned. | | | | |
| | Improvements of the amount of water received per unit production (Compared to FY2010 level) | 94% | 86% | Achieved | 92% | 90% |
| | | We made improvements at semiconductor plants where a large amount of water is used. | | | | |
| Management of chemicals | Reduction in the total emissions of chemicals discharged (Compared to FY2000 level) | 1,625 tons <65%> | 1,390 tons <55%> | Achieved | 1,763 tons <65%> | 1,967 tons <78%> |
| | | We achieved the goal mainly by installing equipment for removing volatile organic compounds. | | | | |
| | Improvement of the amount of chemicals handled per unit production (Compared to FY2010 level) | 98% | 92% | Achieved | 97% | 95% |
| | | We achieved the goal mainly by optimizing chemical inputs and reviewing the conditions for wastewater disposal. | | | | |

| Green Management | | FY2013 | | | FY2014 | FY2015 |
|---|---|---|---|---|---|---|
| | | Goal | Result | Evaluation | Goal | Goal |
| Conservation of biodiversity | Developing ecosystem networks with production sites playing a central role in collaboration with local communities | Percentage of sites where surveys were conducted 100% Percentage of sites for which indicators were selected 50% | Percentage of sites where surveys were conducted 100% Percentage of sites for which indicators were selected 91% | Achieved | Percentage of sites where surveys were conducted 100% Percentage of sites for which indicators were selected 100% | Make changes to improve biodiversity. |
| | | We conducted surveys at 64 sites worldwide and selected indicators at 58 sites. | | | | |
| Environmental education and human resource development | Development of Toshiba eco-style leaders | 400 leaders | 443 leaders | Achieved | 800 leaders | 2,000 leaders |
| | | We trained 335 leaders in Japan and 108 leaders overseas, achieving the goal. | | | | |
| Environmental communication | Expanding environmental communication to connect people around the world | Fostering a sense of togetherness among employees | Light-down campaign conducted | Achieved | Toshiba Group Global Environmental Action | Promotion of "Global Environmental Action" to cope with global environmental issues |
| | | On June 5, we conducted the Light-down Campaign and shut off the lights at Toshiba Group business and production sites in Japan and overseas. | | | | |

Note)Figures for benchmark years indicate performance data in the boundary set for 2013. Applicable to production and non-production sites in Japan and abroad.

As an indicator that enables appropriate assessment of reduction in greenhouse gas emissions, volume-based real outputs are used for basic-unit goals. Real production = [Nominal output in Japan] / [corporate goods price index (for electrical equipment) announced by the Bank of Japan for the year (compared to 1990 levels, where 1990 is represented as 1)] + [nominal output outside Japan]

*1 [$CO_2$ emissions of assumed substitute products] - [$CO_2$ emissions of shipped products] (Compares annual emissions during the usage stage and cumulates emissions for half the product life.)

*2 Compared with $CO_2$ emissions (rate to net production output) for average thermal power of the same fuel type; for nuclear power/renewable energy, compared with $CO_2$ emissions (rate to net production output) for average thermal power of all types.

*3 Rate of increase in the amount of resources saved (based on FY2010).

*4 [Amount of recycled plastics] / [Amount of plastics used for products] × 100

*5 PVC: Polyvinyl chloride is one of the most common plastics and is used in a wide range of products. There is concern about the generation of hazardous substances due to inappropriate treatment of PVC at the time of disposal and the harmfulness of some additives (e.g., phthalate esters) used to soften PVC.
BFR (brominated flame retardants): BFRs are used as flame retarders for plastics. Some BFRs are raising health concerns while others persist in the environment or are bioaccumulative. There is also concern over the generation of hazardous substances due to inappropriate treatment at disposal.

*6 Abolished except special uses.

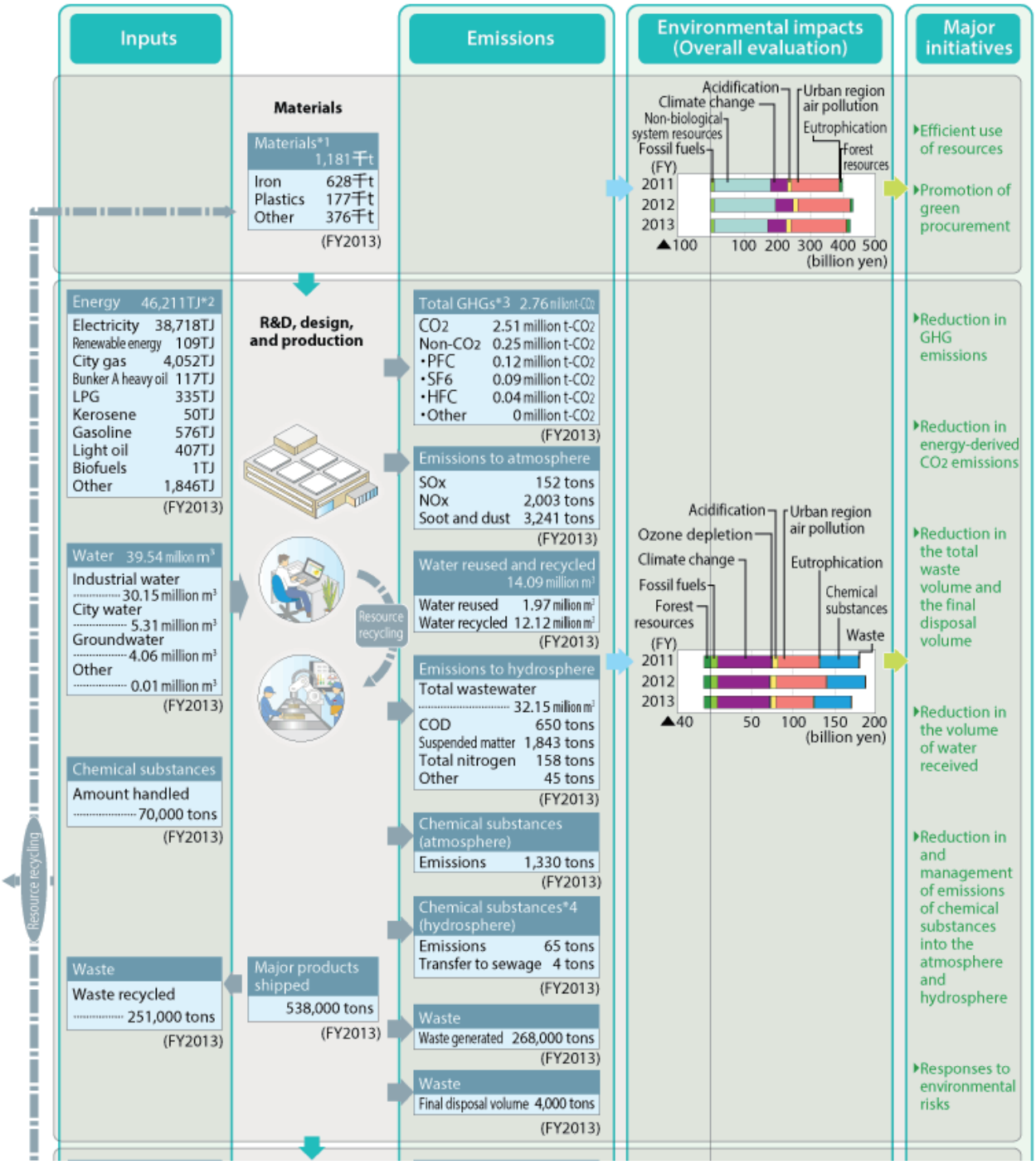
*7 4.87 t-$CO_2$ /10-thousand-kWh is used for the power factor in Japan, and GHG Protocol data is used overseas.

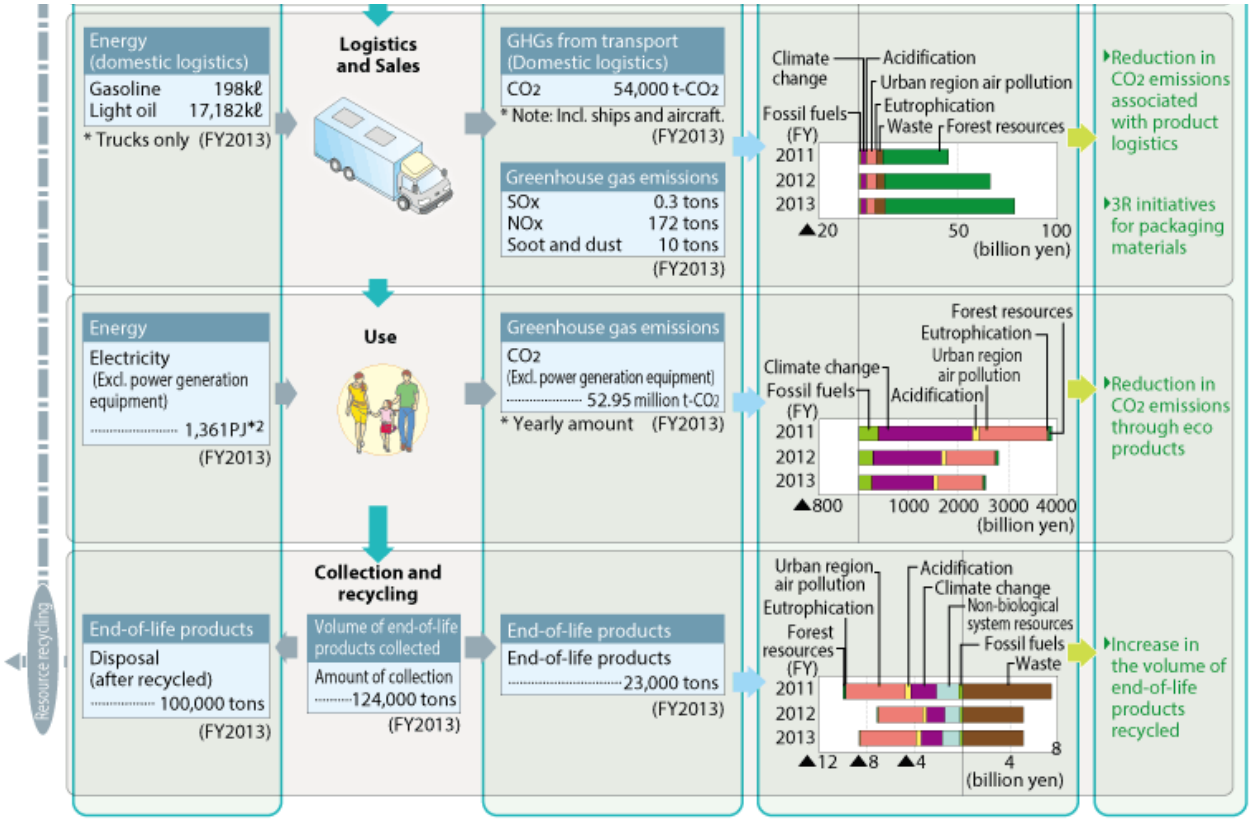
*8 The coefficient of electricity for sites in Japan is fixed to that of FY2010.

*9 Obtained by deducting the volume of objects with value from the total volume of waste generated (excluding business and production sites engaged in waste treatment and power generation).

# Overview of Environmental Impacts

Toshiba Group, as shown in the material flow below, is proceeding to quantitatively analyze the environmental impact at each stage of the product/service life cycle—from materials procurement, manufacturing, and distribution to customer usage, product retrieval, and recycling. Furthermore, we are carrying out overall assessments on the environmental impact of chemicals, greenhouse gas emissions, and resources/energy using the Life-cycle Impact assessment Method based on Endpoint modeling (LIME). We realized that the environmental impact is most significant during the customer usage, material procurement, and manufacturing stages of the product life cycle in that order. As such, we feel that it is extremely important to implement effective initiatives based on environmental impact assessments carried out across the entire product life cycle. Moving forward, we are expanding the items on which we are collecting data and are striving to improve the precision of the data. This data was collected from 598 Toshiba Group companies (actual results for FY2013).






*1 Material inputs are calculated based on the Estimation Method for Material Inputs Using Input-Output Table (EMIOT), a method independently developed by Toshiba Group. ("EMIOT" : Estimation method for Material-inputs using Input-Output Table) EMIOT uses ratios of resources used per unit production, which are prepared based on the Input-Output Table, to calculate total material inputs.One distinctive feature of the method is that input-output analysis is applied only to the flow of resources from upstream to downstream. Another is that the volume of such resources by industrial sector is stored in a database.Using this method, it is possible to calculate weights of input resources by resource type from the data on procurement (monetary value) by resource category, which are gathered by materials procurement divisions. Therefore, data can be gathered not only on direct materials, but also indirect materials.Previously, it was difficult to clarify the

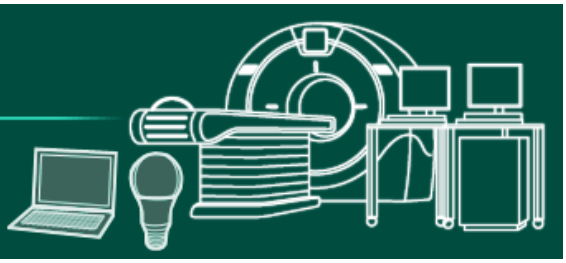
*2 The joule is a unit of energy measuring mechanical work, heat, and electricity. One joule equals about 0.239 calories. 1 TJ = $10^{12}$ J; 1 PJ = $10^{15}$ J

*3 In this table, the $CO_2$ emission coefficient for electricity in Japan is 3.50 t-$CO_2$/10,000 kWh in FY2010, 4.76 t-$CO_2$/10,000 kWh in FY2011, and 4.87 t-$CO_2$/10,000 kWh in FY2012 and FY2013.

*4 The volume of hydrogen fluoride and its water-soluble salt emitted into hydrosphere since FY2009 is calculated to be zero because hydrogen fluoride used becomes non-water-soluble salt through post-use treatment.

# Greening of Products

Aiming to achieve the highest level of environmental performance, we strive to expand the creation and widespread use of Excellent ECPs.



## Creation of Excellent ECPs

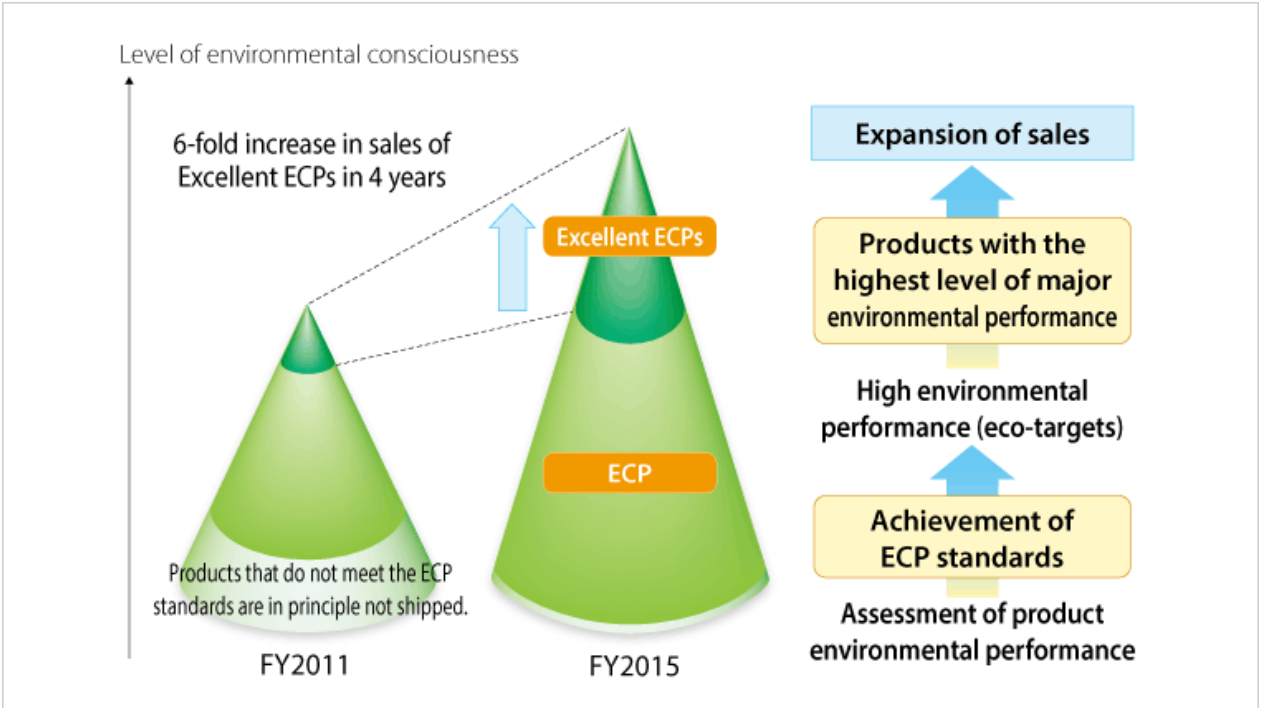
### Aiming to achieve the highest level of environmental performance for all products that we develop

Toshiba is implementing the Greening of Products initiative, which aims to achieve the highest level of environmental performance for all products that we develop and to minimize the environmental impact of products throughout their entire life cycles. We will promote the development of localized products designed to minimize environmental impact in response to the individualized needs of different countries and areas, including products equipped with cutting-edge features for developed countries as well as products for developing countries, where environmental impact is likely to increase as a result of economic growth.
To create ECPs, Toshiba Group sets “eco-targets” and incorporates them into product specifications to develop products with the highest level of environmental performance in the business strategy formulation and product planning stages.

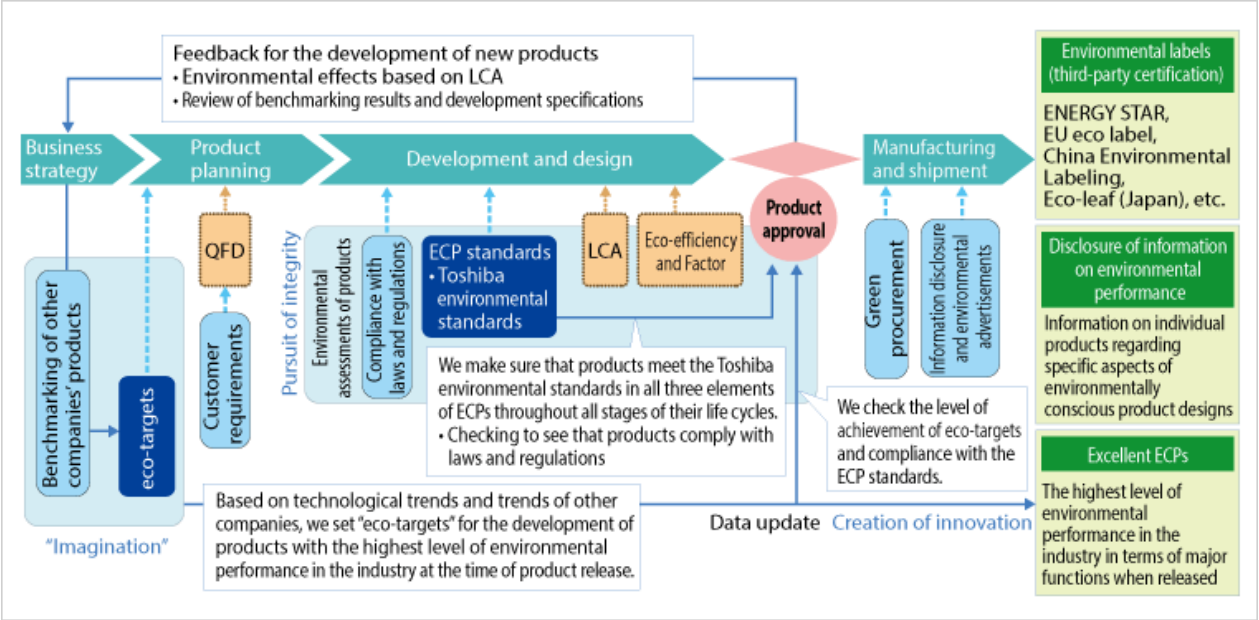
Then, in the product development and design stages, we make environmental assessments of the products to ensure that they meet the Toshiba environmental standards. During the environmental assessments, we check whether the products comply with laws and regulations as well as meet the ECP standards in all three elements throughout all stages of their life cycles.

In the final product approval stage, we check the level of achievement of the eco-targets and whether the products are in compliance with the ECP standards, certifying those products with the highest level of environmental performance.

**Expansion of creation of Excellent ECPs**



**Process of creating Excellent ECPs**



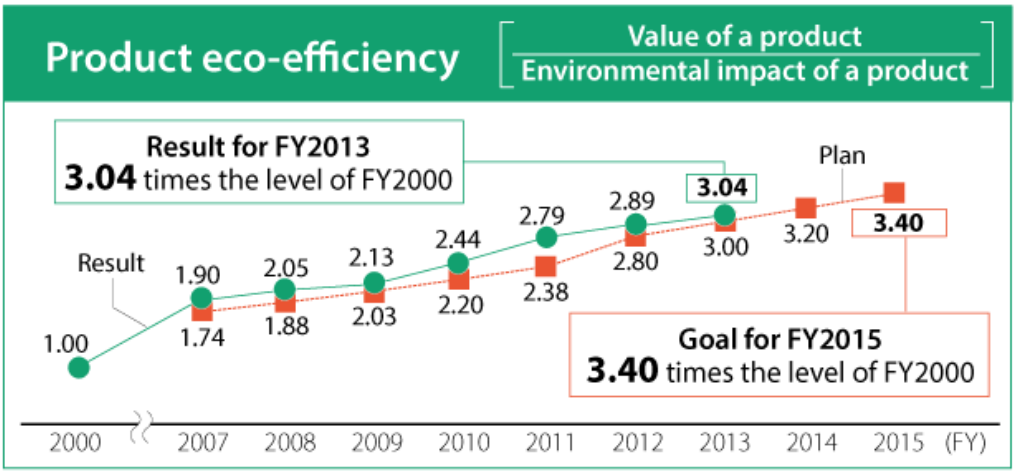

## Aiming to increase product eco-efficiency by 3.4 times in FY2015

Since 2003, Toshiba Group has been promoting activities to create ECPs by viewing product eco-efficiency, or the Factor, as an important indicator.

### Results of FY2013 and future initiatives

By the end of FY2013, we had calculated the Factor values (degree of improvement in eco-efficiency) for almost all Toshiba Group products. By enhancing the value of products and by reducing their environmental impact, Toshiba Group was able to increase the average environmental efficiency of all the products to 3.04 times the FY2000 level (Factor 3.04), achieving our goal as initially planned.

We aim to increase product eco-efficiency to 3.40 times the level of the base year in FY2015.

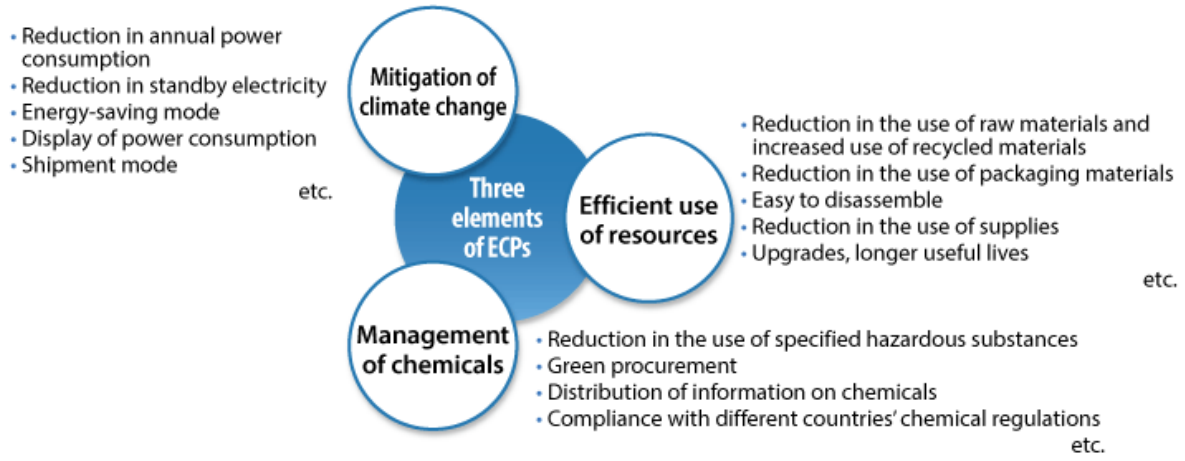


## Toshiba Environmental Standards

**- Assessment based on the three elements of ECPs -**

Environmentally Conscious Products (ECPs) are designed to minimize environmental impact throughout all stages of their life cycles, including during procurement of materials, manufacture, distribution, use, disposal, and recycling. ECPs have three elements: mitigation of climate change, effective use of resources, and management of chemicals. Toshiba Group sets its own environmental standards (ECP standards) for each product model to assess overall environmental performance, which includes all three of these elements. Environmental assessments are performed during the development of every product to check not only whether the product complies with laws and regulations but also to check whether the product meets the ECP standards.

**Three elements of ECPs**



# Excellent ECPs

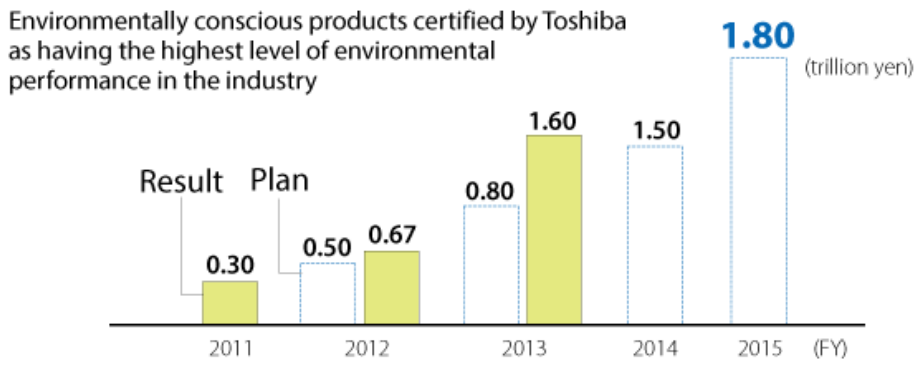
## Group-wide efforts for the creation of products with the highest level of environmental performance

### Results of FY2013 and future initiatives

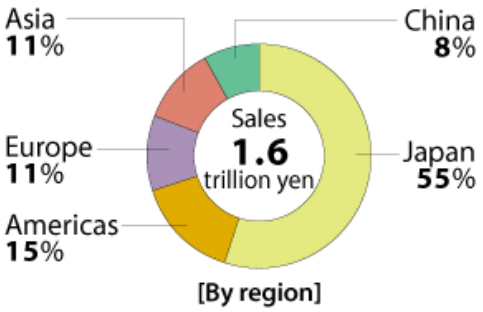
Toshiba Group is making efforts to achieve the highest level of environmental performance for all products we develop. In an effort to enhance the creation of ECPs, we have introduced sales of Excellent ECPs as an indicator. In FY2013, we certified 127 products as Excellent ECPs. As a result of expanding the range of certified products in the areas of social infrastructure, healthcare, and electronic devices, Toshiba Group's sales of Excellent ECPs totaled 1.6 trillion yen, greatly exceeding the goal (800 billion yen). The Group's initiative is not limited to products for the domestic market; Excellent ECPs are being created in countries around the world.

We will further accelerate the creation of Excellent ECPs in the areas of solutions and system products, for which environmental performance is difficult to measure, with a view to achieving the Fifth Environmental Action Plan goal (sales of Excellent ECPs totaling 1.8 trillion yen in FY2015) as soon as possible.

**Sales of Excellent ECPs**




**Breakdown of sales of Excellent ECPs**



## Products certified as Excellent ECPs in FY2013

### Energy & Infrastructure

In order to meet growing energy demand in the world, Toshiba Group will provide basic power supply and power generation systems globally that contribute to a stable energy supply and the shift toward a low carbon society as well as equipment, systems, and services that support social and industrial infrastructure. Geothermal power generation, which uses the thermal energy of the earth's magma, contributes to mitigation of climate change by stably providing electricity without being affected by seasonal transitions and weather changes. In addition, more efficient industrial equipment and motors for infrastructure facilities contribute to conserving energy throughout all of society and mitigating climate change.

**Geothermal power generation**

**Flash geothermal power generation systems**

- No.1 share[*1] in the global market in terms of total generating capacity
- Realizing high performance and high reliability with moisture removal technology, coating technology, axial exhaust turbines, etc.

**Premium gold motor (left photo) and PM motor (right photo)**

- Industry's highest[*2] iron core efficiency[*3] in IE3 motors

- Industry's highest[*2] iron core efficiency[*3] in IE4 motors

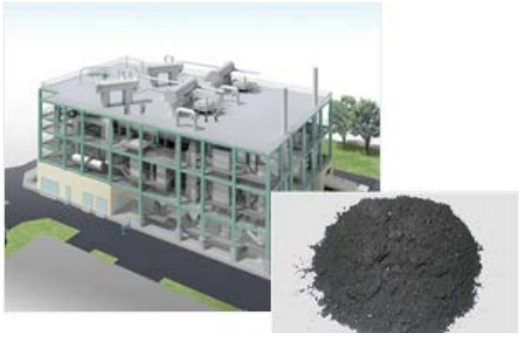
### Community Solutions

In order to contribute to the creation of smart communities designed to be environmentally friendly and to ensure comfortable lifestyles, Toshiba Group provides total solutions for a wide range of areas, including energy and water as well as transportation and medical care, for offices, factories and homes. In offices, for example, we develop devices with the highest efficiency for facilities (e.g., lighting and air conditioning systems as well as elevators) and provide advanced office equipment. We also provide services for achieving detailed control of the operation of such devices, thereby reducing the overall energy consumption of buildings. In terms of water infrastructure, we contribute to reducing public facilities' environmental impacts.

**Custom-built elevator ORDER SPACEL-GR**


- Highest energy savings[*2] (reducing power consumption up to 50%)
- Reducing the amount of oil fed to the guiderail to zero

**System of sewage sludge to fuel**



- This system recycles sewage sludge generated from sewage treatment process by pyrolyzing it and consequently reduces greenhouse gas emissions largely.

## Healthcare Systems & Services

To meet the needs of medical care, which continue to become more complex and diverse, Toshiba Group develops image diagnosis systems (e.g., X-ray CT equipment, Magnetic Resonance Imaging (MRI) systems, and ultrasound systems) to provide the most advanced medical services with the least environmental impact. We promote the creation of ECPs by using dose reduction technologies (which minimize patient dose), energy conservation technology, and resource conservation technology (which reduces installation work by decreasing the size and weight of products).

**MRI system Vantage Elan™**

- No.1 in energy and resource conservation class[*2] (power consumption & installation space)
- Realizing a small footprint and low energy consumption while maintaining high level of performance

**Ultrasonic diagnosis system Aplio™ 500/400/300**

- Highest energy and resource savings in its class[*2] (in terms of power consumption, standby power consumption, installation area, and weight)

## Lifestyle Products & Services

Toshiba Group provides high-value-added, low-environmental-impact products designed for comfortable, environmentally friendly lifestyles. To meet the needs of customers?sometimes even ahead of the times?around the world, we offer products and services worldwide that best fit local characteristics.

**Vertical-type fully automatic washing machine AW-90SVM**

- Highest energy savings[*2] ; power consumption: 58 Wh (during rated washing and drying operation)

**Dynabook KIRA V634/V834 Ultrabooks**

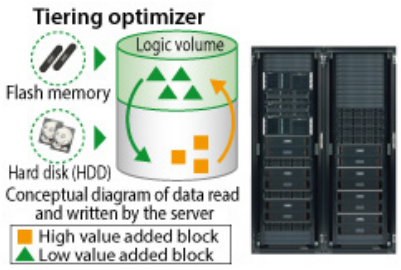

- Highest energy savings[*2] (ENERGY STAR TEC value[*4] : 8 kWh)
- Industry's longest[*2] battery life (V634/27KS)
  (V634/27KS: 22 hrs.)
  (V834/29KS: 14 hrs.)

## Cloud & Solutions

To support the use of advanced ICT, including data centers and servers, in the big data era, Toshiba Group is developing storage products such as NAND flash memory drives and HDDs, thereby playing a leading role in the industry. At the same time, we also take advantage of our strengths in manufacturing NAND, HDD and SSD devices so as to provide the storage systems that best meet customers' needs.

**Storage system**

**Toshiba Total Storage Platform**




- Achieving the optimal balance between performance and capacity through a hybrid configuration combining flash storage and a hard disk, thereby contributing to energy conservation and space savings
- Realizing AC cables free of polyvinyl chloride (PVC)

**Learning Management System**

**Generalist® L/M**

- Using LMS will help to reduce administrative work associated with management of training, use of facilities and transfers of students, and in turn, contribute to energy and resource conservation.

*1 As of June, 2013. Capacity based power generation total delivery record, based on Toshiba in-house research.

*2 At the time of product release; not intended to guarantee the current position.

*3 Obtained by dividing the energy conversion efficiency by the cubic volume of the iron core.

*4 Power consumption calculated based on use of the product, which serves as a standard to determine whether the product conforms to the International ENERGY STAR program.

# Medical Equipment with the Highest Level of Environmental Performance

**Toshiba Group is making efforts to achieve the highest level of environmental performance for all products that we develop in order to minimize the environmental impact of products throughout their entire life cycles. Here, we present an initiative for creating Excellent ECPs in the healthcare business, one of Toshiba Group's three major businesses.**


## Major environmental performance features of Vantage Elan™, Toshiba's MRI system

**Minimizes installation space**

Minimum footprint of approximately 23m²

Reduces installation space by 29% compared to conventional models

Can be installed in locations other than machine rooms

**Reduces power consumption to the lowest possible level**

Smallest standard electric power consumption (25 kVA) in its product class

Can be operated in eco mode

Reduces system peak power consumption by approximately 50%

**Greatly shortens the installation period**

The minimum installation period required after system delivery is five days (for new installations)

**Equipped with Pianissimo™ Σ, a new noise-reduction system**

Comes standard with Pianissimo™ Σ

## Procurement of materials, planning, and design

### Environmentally conscious design

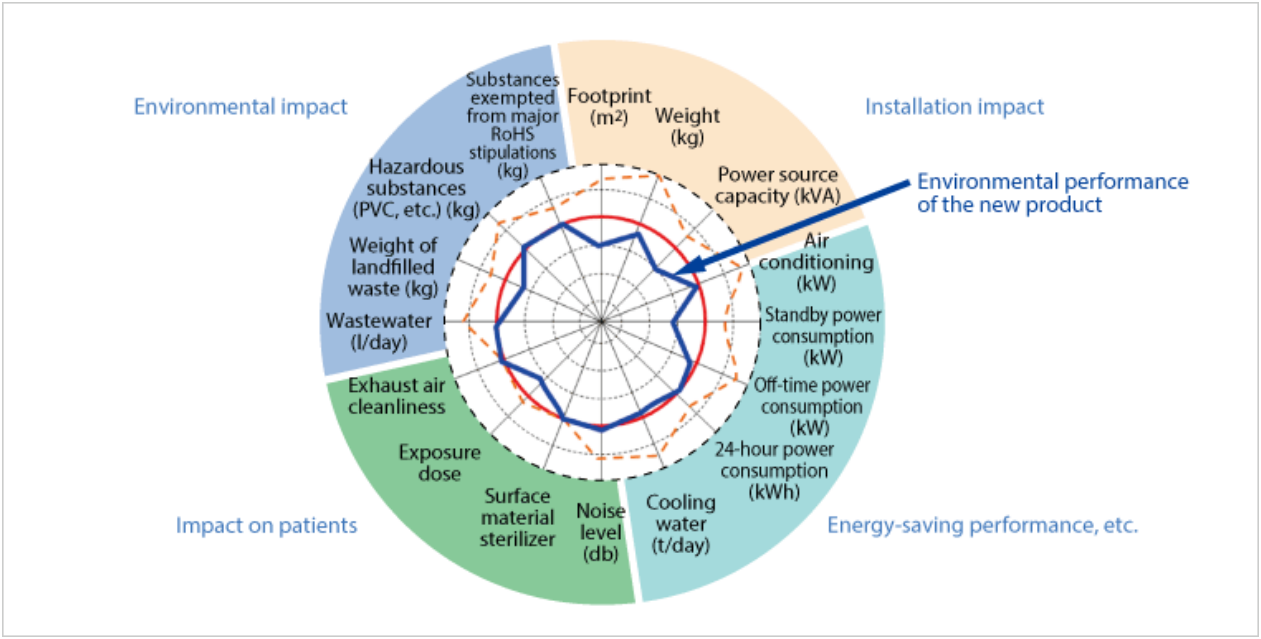
Toshiba Group builds and operates product development/design processes in compliance with International Electrotechnical Commission Standards IEC 60601-1-9 (Collateral standard: Requirements for environmentally conscious design). In particular, when creating product planning and design processes, which essentially determine environmental performance, we identify global

and local market trends as well as customers' requirements with respect to the environment from the perspectives of green procurement, mitigation of climate change, effective use of resources, management of chemicals, and impact on patients. The following example illustrates this. We also consider the environmental performance of our previous product models and set targets for environmental performance (“eco-targets”) in order to assess and improve product performance according to established procedures.

### Procurement of materials

We have created a system for surveying substances subject to environmental regulations that is designed to search for and register substances subject to the latest regulations. In collaboration with our suppliers and companies upstream in the supply chain, we are working to produce environmentally conscious products as well as to select safer parts and materials that can reduce environmental impact through efficient system operation. At the same time, we are revising our Green Procurement Guidelines and holding briefing sessions on these guidelines to promote the use and development of parts and materials having a smaller environmental impact—in particular, reducing the amount of chemicals in products that contain chemicals subject to regulations. In the future, we will further enhance collaboration with our suppliers and work to reduce environmental impact through a wide range of initiatives, including management of chemicals, reduction in $CO_2$ emissions, and recycling of resources throughout our supply chain in order to provide safer, more reliable products.

**Environmental performance assessment radar chart (example)**



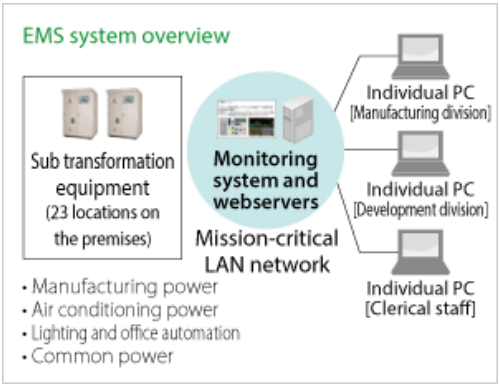

## Manufacturing

### Reducing power consumption through improvement in operational efficiency

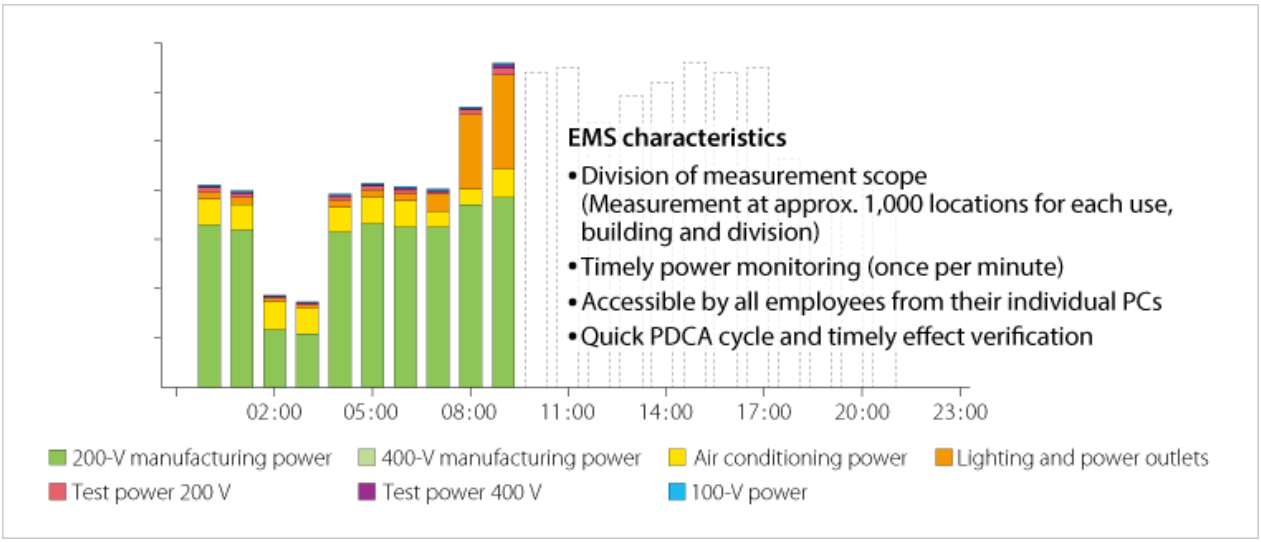
Toshiba Group also reviews the basic design of parts shelves and parts arrangements to optimize operation flows in order to shorten the total manufacturing period and to reduce the amount of power consumed by production lines. At the same time, we also strive to reduce standby power consumption for manufacturing facilities, promote more intensive use of a smaller number of manufacturing facilities, and minimize unnecessary power consumption on holidays and during the night.

In addition, we have introduced the latest Energy Management System (EMS) to visualize where and how much electricity is currently being consumed; we use this system as a tool to conserve energy. This initiative was highly

recognized and we were awarded the FY2013 Kanto Bureau of Economy, Trade and Industry Director-General's Award for Outstanding Energy Management Factories, which is awarded to factories and offices that have achieved outstanding results and performance in making effective use of electricity, promoting energy conservation, and reducing environmental impact.




**Graph depicting energy monitoring**




## Distribution and sales

### Further reductions in environmental impact resulting from transport

By extensively reviewing procedures for system shipment and adjustment of shipment schedules, we are working to reduce the total truck tonnage required for transport. We are also promoting modal shifts and proactively using railroad transportation to transport goods to western Japan in order to reduce the use of packaging materials.


Railroads, which generate only one-eighth of the $CO_2$ emissions of truck transport, are a low-environmental-impact means of transportation. Toshiba Group is actively promoting modal shifts to railroad and ship transport and has obtained the Eco-Rail Mark (In Japanese Only) certification issued jointly by the Ministry of Land, Infrastructure, Transport and Tourism and the Railway Freight Association.

### Advertisement of environmental performance

In order to have a wide range of customers understand the environmental features and performance of our products, we prepare eco-specifications, product catalogs, and summary explanation documents for sales as well as actively advertise our products' environmental performance at major academic conferences and exhibitions held in countries around the world.


## Installation and delivery

### The smallest footprint in its product class

This is the first Toshiba 1.5 Tesla MRI system that does not require a machine room for installation. The gantry and cradle and so on are designed to be compact. We also reviewed innovatively the basic design of the product, including the installation method, cooling method, and control cabinet layout. Its footprint has been reduced by approximately 29% compared to previous models. The new system can be installed in a space for a low-magnetic field MRI system.

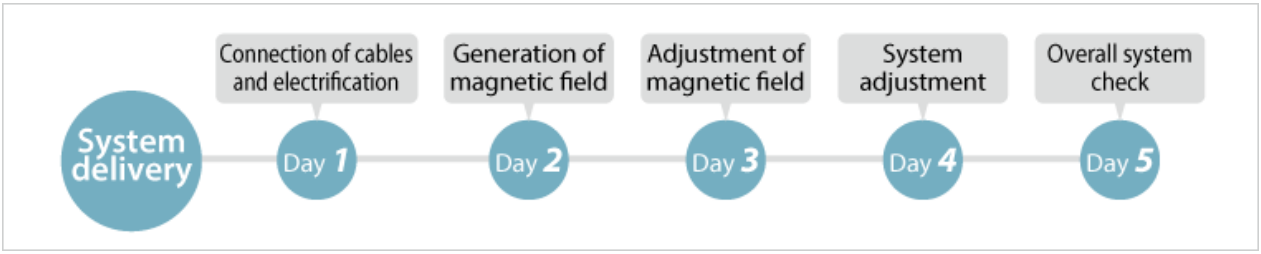

* Actual layout varies depending on installation conditions.

* Approximately 23m² for a minimal footprint

### Installation period shortened to start operation in as soon as five days after delivery

A newly installed system can be put into operation in as little as five days after delivery.
This system reduces the time required for installation and can also reduce the amount of construction waste generated during delivery and installation. Toshiba Group is working to reduce the environmental impact due to product installation work, which has often been overlooked in the past.

* The installation period is a standard period based on a simulated installation conducted by Toshiba.



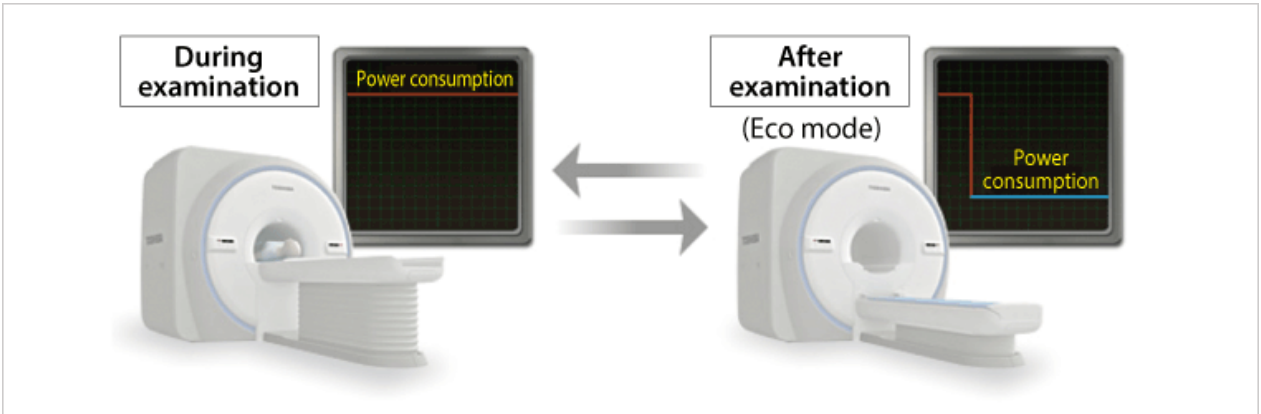

## Use

### Highest energy- and resource-saving performance*

**Drastic reduction in power consumption; can be recovered from Eco mode within one second to be ready for scanning.**

The new system has features designed to conserve energy without requiring operators to make conscious efforts, including Eco mode (which automatically puts the system in standby mode when the bed is lowered) and nighttime Eco mode. Compared to previous models, it reduces maximum power consumption by approximately half and contributes to cost saving as well as environmental protection. Even during Eco mode operation, the system can be recovered from Eco mode within one second to be ready for scanning. Therefore, it can effectively respond to on-site needs during emergency transport and examinations. Furthermore, the system minimizes helium evaporation through use of the latest high-performance cooling system, thereby almost entirely eliminating the need for injection of liquid helium, a rare material.

* As of when the product was released on the market, based on Toshiba data

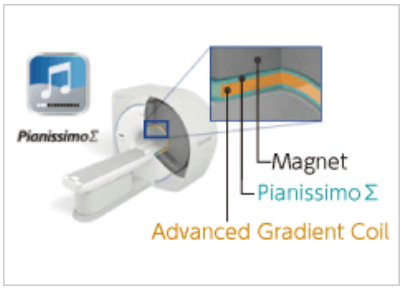


### One of the most comfortable examination environments in its product class*

**Pianissimo™ Σ, Toshiba's proprietary noise-reduction technology for the quiet MRI system**

The sound generated during MRI scanning is caused by the vibration of gradient coil.
Vantage Elan is equipped with Pianissimo™ Σ, Toshiba's proprietary noise-reduction technology. Pianissimo™ Σ reduces the noise level significantly in all types of scanning and provides quiet examinations for patients.

* As of when the product was released on the market, based on Toshiba data

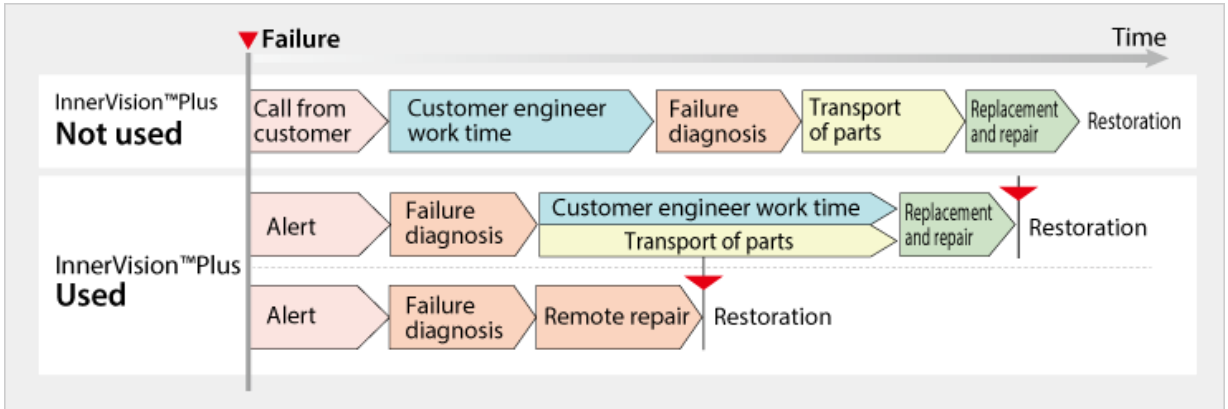



## After-sales services

### Refurbishing services and utilization of InnerVision™ Plus, a remote maintenance system

We provide refurbishing services not only for products but also magnets and other parts that in the past were usually discarded.

We also offer remote failure diagnosis services through use of InnerVision™ Plus, a remote maintenance system designed to shorten the period of time required for on-site failure diagnosis and to promptly provide repair parts. In addition, we perform detailed analysis of log information to identify equipment conditions and system failures as well as reduce the frequency of customer engineers' visits to hospitals, thereby providing services without making demands on customers' time and contributing to reducing fuel costs and exhaust gas ($CO_2$) emissions of service cars.




* Functions and services vary among product models.

# Mitigation of Climate Change by Products and Services

**In order to promote developments aimed at mitigating climate change, Toshiba Group assesses the entire life cycle of products. We will provide energy-saving products worldwide and reduce $CO_2$ emissions in order to contribute to mitigation of climate change.**

## Reducing $CO_2$ emissions through the Greening of Products initiative

With a view to mitigating climate change, Toshiba Group is striving to reduce $CO_2$ emissions through the Greening of Products initiative aimed at developing products by setting eco-targets for mitigation of climate change to improve major environmental performance.

Toshiba Group's products cover a wide range of categories from consumer electronics to power generation plants, and $CO_2$ emissions from these products in different stages of their life cycle vary from one product to another. Under the Fifth Environmental Action Plan, we will continue to evaluate products throughout their entire life cycle. At the same time, we will focus our efforts on reducing environmental impact during customers' use of products, which has a large effect on the environmental efforts of Toshiba Group as a whole, and further enhance the annual $CO_2$ emissions reduction effect that may be achieved if conventional products are replaced by eco products.

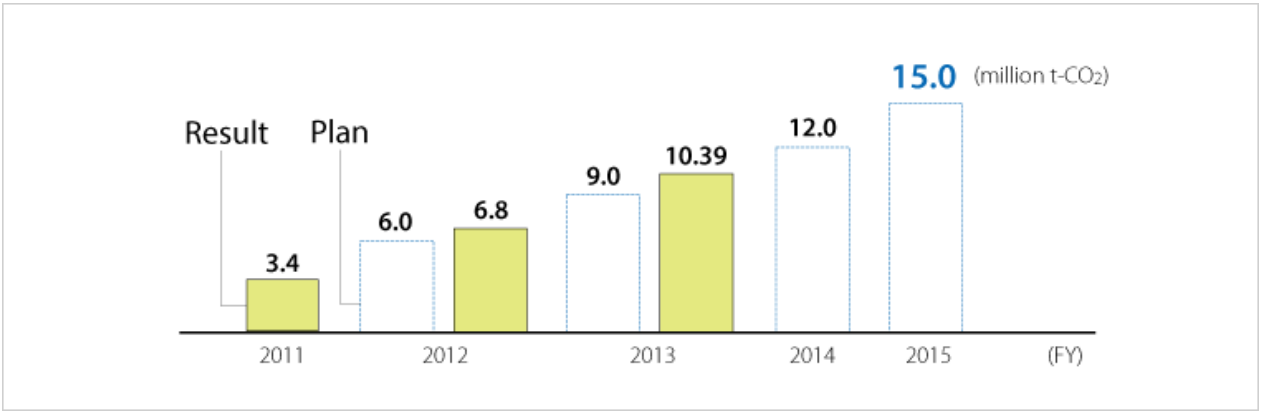
### Results of FY2013

Since FY2010, we have set eco-targets regarding the mitigation of climate change in order to develop products with the highest level of environmental performance. In FY2013, we were able to reduce $CO_2$ emissions by 10.39 million tons per year by offering newly developed products throughout the world.

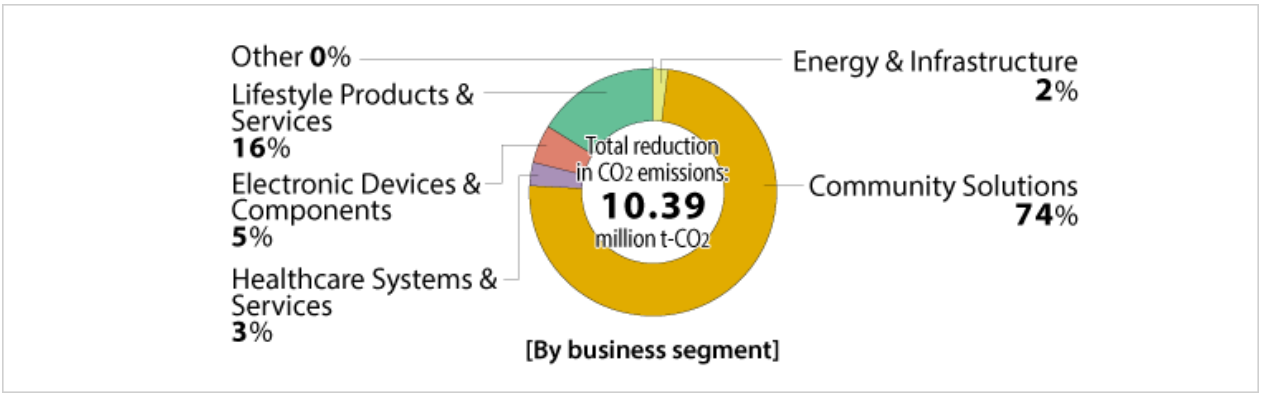
### Future initiatives

Toshiba Group will continue to reduce $CO_2$ emissions across all its products by identifying key factors that contribute to reducing $CO_2$ emissions and by sharing advanced examples and core technologies among group companies. At the same time, we will expand our business in global markets for home appliances, such as digital products that use substantially less energy and LED light bulbs that have large energy-saving effects, as well as for social infrastructure products—especially in markets in emerging countries where there is a rapidly growing demand for products that can achieve great reductions in $CO_2$ emissions. Through these measures, we aim to achieve a reduction in $CO_2$ emissions of 15 million tons by FY2015.

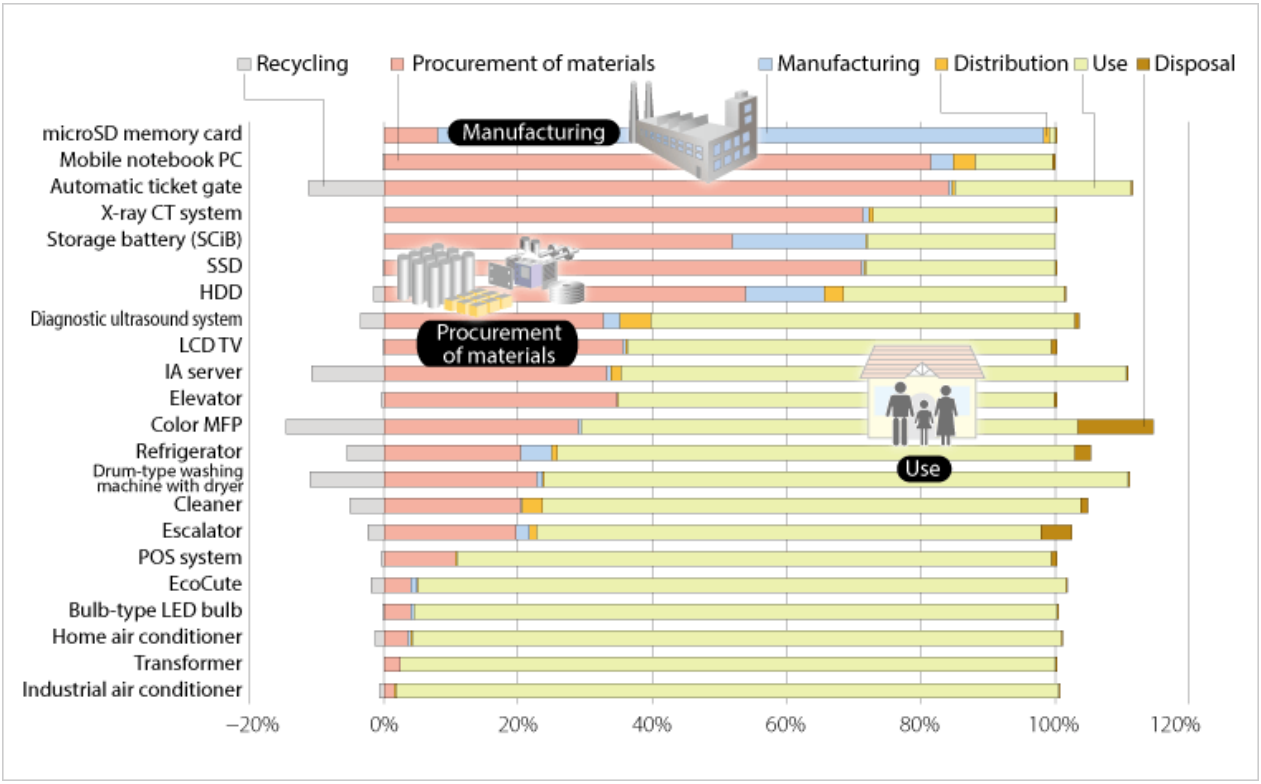
**Changes in reductions in $CO_2$ emissions (FY2013)**



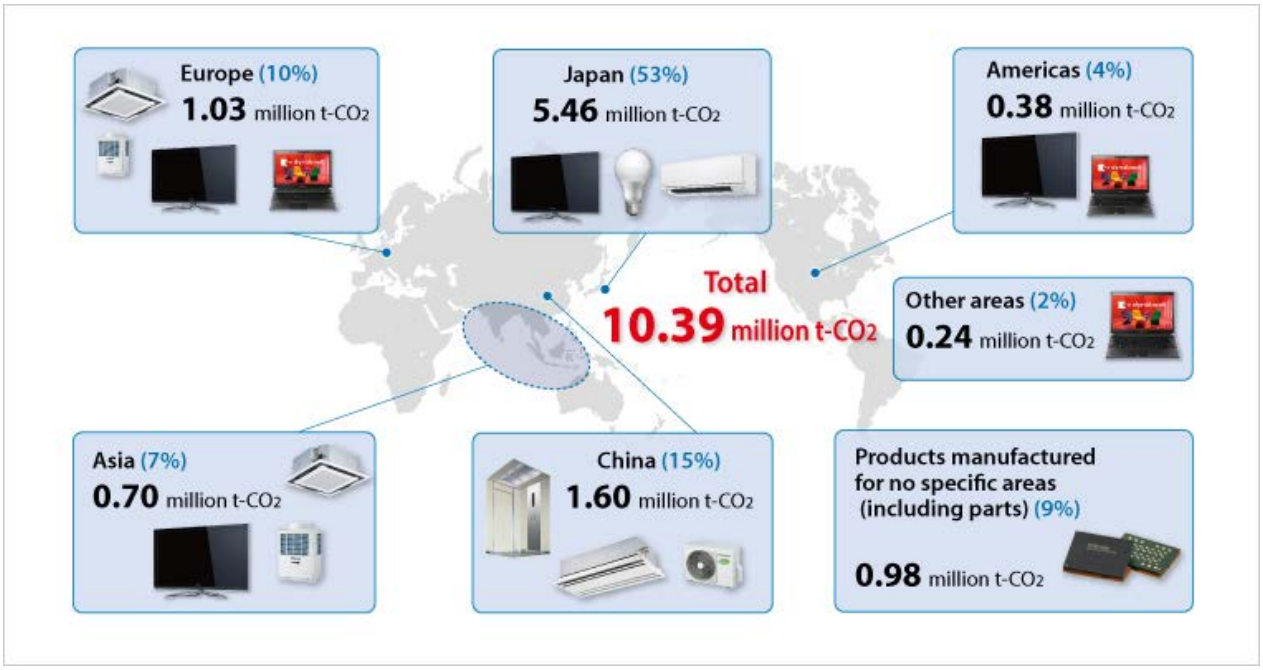
**Breakdown of reductions in $CO_2$ emissions (FY2013)**




**Percentages of $CO_2$ emissions from the lifecycle stages of Toshiba Group's products**




**Breakdown of reductions in $CO_2$ emissions by area (FY2013)**




* The photos is for illustrative purposes only.

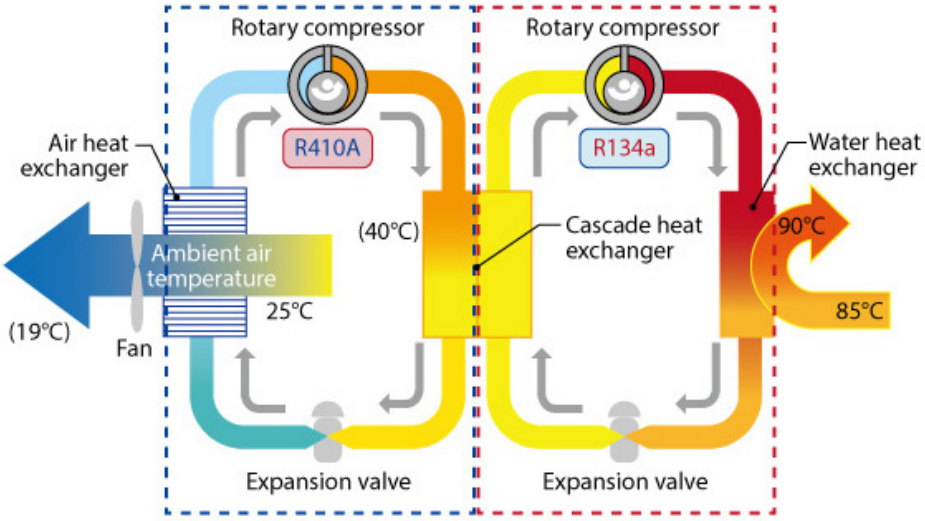
## Case Study: Expanding the application of heat pumps to high-temperature heat sources

**Toshiba Carrier Corporation**

Heat sources with temperatures close to 100℃ are required for many processes, including food processing, chemical manufacturing and coating. Conventional systems use boiler steam as such a heat source. Although using a heat pump as a heat source can greatly reduce $CO_2$ emissions, for general heat pump chillers it is difficult to realize high temperatures exceeding 55℃.

To overcome this drawback, Toshiba Carrier Corporation has developed a circulated heating heat pump that provides a high-temperature, large-capacity heat source by using a double refrigeration cycle with two different types of coolants. Using this heat pump system as a heat source in processes that previously have been carried out by boiler steam can reduce $CO_2$ emissions by more than 50%.

**Double refrigeration cycle**




* This figure is simplified. The heat pump is equipped with parts not depicted in the figure, such as a four-way switching valve and container.

Capable of providing high temperatures of 50°C to 90°C for large-scale processes

CAONS700

Can be installed close to a process requiring a temperature of 50°C to 90°C by using separate units

CAONS140

A high-efficiency, compact model specifically designed to provide heat sources with low and medium temperatures of 30°C to 60°C, which can be used in a variety of processes

CAONS45

# Efficient Use of Resources

**Toshiba Group promotes 3R (reduce, reuse and recycle) initiatives for products to reduce resource consumption and increase incoming and outgoing recycling.**

## Toshiba Group's 3R* initiatives for products

In order to create a sound material-cycle society, there is a need to reduce the amount of resources extracted and discharged as waste throughout the product life cycle. Toshiba Group is promoting 3R initiatives for products aimed at reducing waste, increasing incoming recycling and improving outgoing recycling. We are also taking measures to promote design for 3Rs of product and recycling systems and are implementing activities to reduce the environmental impact of our products throughout their life cycles.

* Reduce, reuse and recycle

### Waste reduction

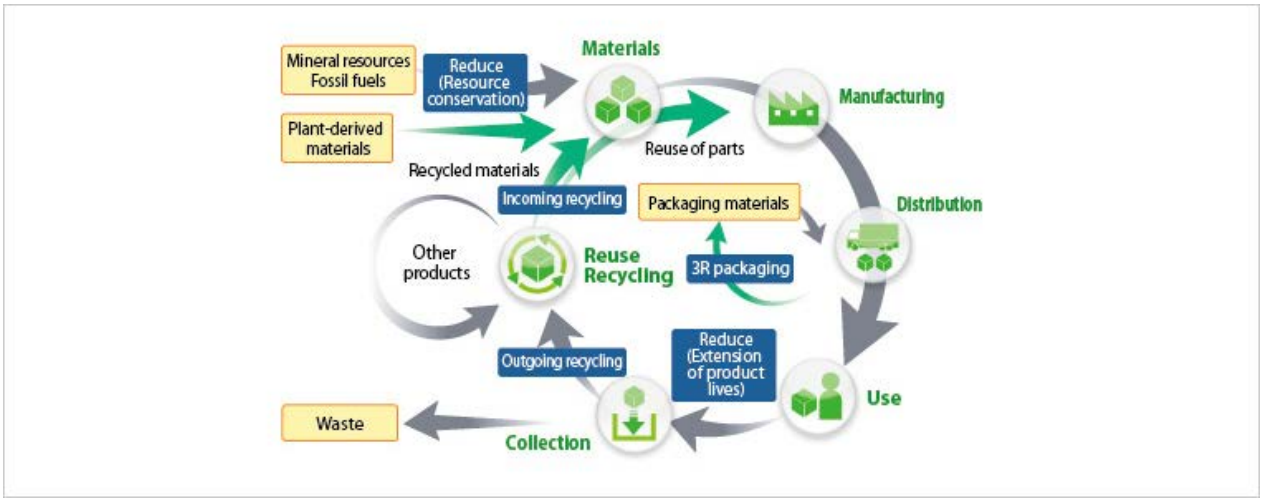
We achieve waste reduction through various means, including reducing the amount of resources used to manufacture products (reducing weight and size) and extending product lives (including upgrades and maintenance).

### Incoming recycling

Incoming recycling refers to the application of recycled materials in products. We will work to improve our incoming recycling rate by increasing our use of recycled materials, plant-derived materials and reusable parts.

### Outgoing recycling

Outgoing recycling refers to the collection and recycling of end-of-life products. By promoting designs for reusing and recycling materials, we improve outgoing recycling while simultaneously improving the system design for recycling end-of-life products further.



## Increase in the percentage of resource savings

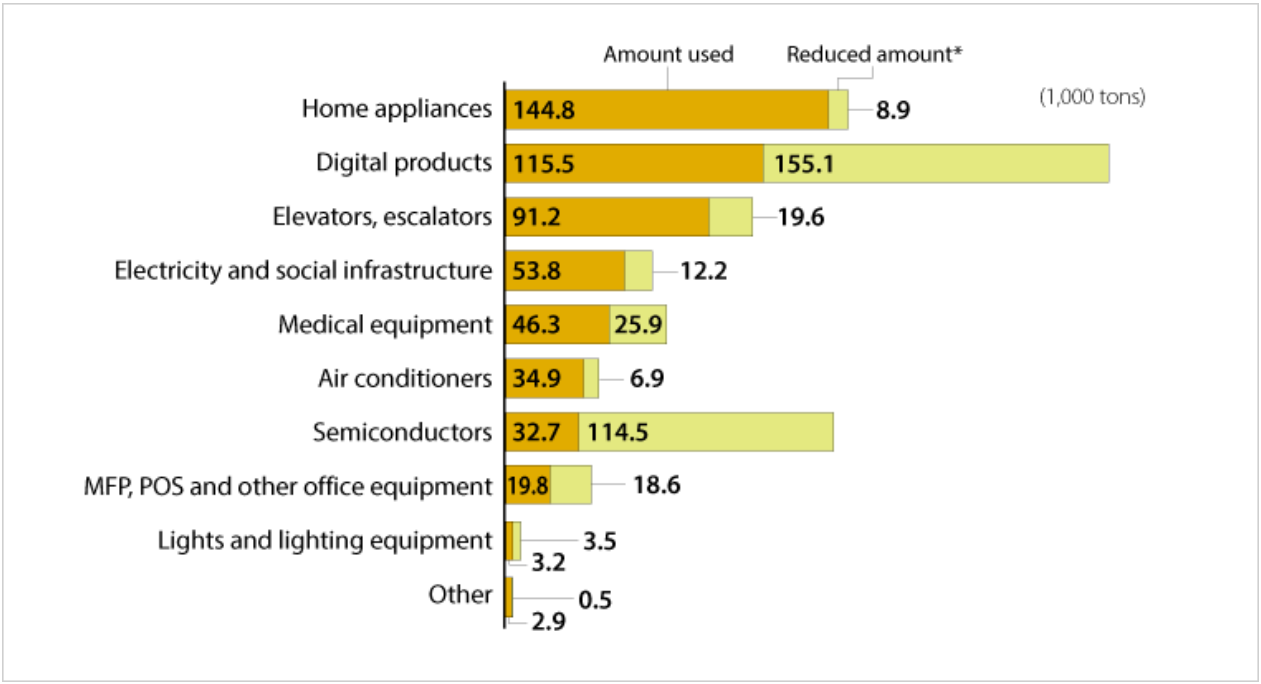
### Results of FY2013

Under the Fifth Environmental Action Plan, we aim to further increase the amount of resources reduced to 1.5 times the FY2010 level. In FY2013, the total amount of resources used in Toshiba Group's major products, estimated by multiplying the amount used for products and packaging materials by the number of shipments, was approximately 540,000 tons. Based on comparisons with the previous product models and adjusting for the expected number of years of use, we also estimated to what extent resource consumption has been reduced for different products. Our comparisons show that we have reduced the use of resources by 370,000 tons, or by 70% compared to previous product models. In addition to reductions in the size and weight of LCD TVs and other digital devices, this result is also due to reductions in industrial product resource consumption, including reductions in the weight of elevators as well as increases in the capacities of magnetic disks (due to reductions in the number of units produced).

### Future initiatives

We will continue to promote resource-saving designs for all products with the aim of further reducing resource consumption.

**Amount of resources used by Toshiba Group and reductions in resource consumption (FY2013)**




* Calculated by comparison with the previous product models adjusting for the expected number of years of use

### Case Study 1: Reduction in MFP size

**Toshiba TEC Corporation**

The e-STUDIO 2550C series products are medium- and low-speed color multi-function printers (MFPs) designed to be compact and have excellent environmental performance.

We reduced the number of parts used as well as the thickness of plates and molded parts to produce an MFP with a product weight of 57.3 kg (53.4% reduction compared to the previous model) and a footprint of 33,925 mm² (34.4% reduction compared to the previous model), realizing the world's lightest, most compact MFP.

In addition, the newly developed low-temperature fixable toner can reduce power consumption by 60% compared to the previous model, achieving best-in-class energy-saving performance.

* At the time of product release in the medium- and low-speed color MFP category

## Increase in the use of recycled plastics

Toshiba Group is promoting initiatives to recycle plastic waste generated by end-of-life products.

### Results of FY2013

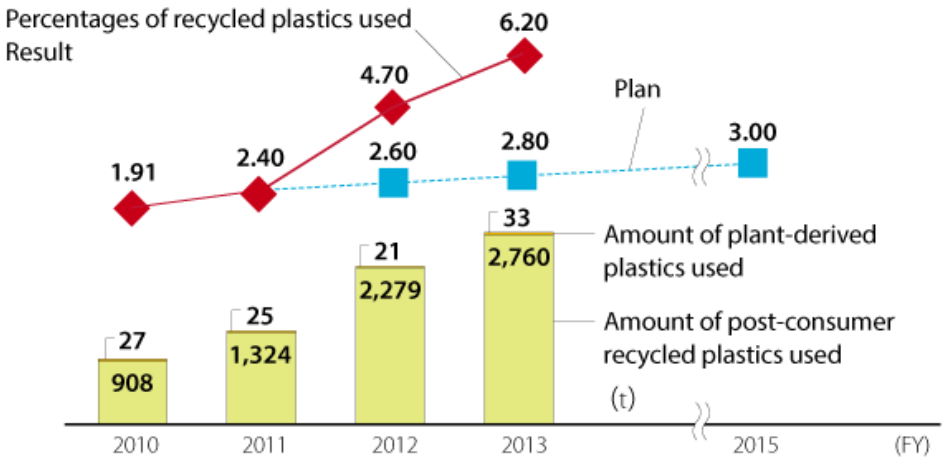
In addition to a significant increase in the use of recycled plastics for washing machines, refrigerators and vacuum cleaners, recycled plastics were also used for office machines (elevators, escalators and systems installed in cars). As a result, use of recycled plastics increased to 2,800 tons in FY2013. The percentage of recycled plastics* used in Toshiba Group products was 6.2%, greatly exceeding the target of 2.8%. We are also using plant-derived plastics to manufacture some plastic parts for LCD TVs and POS systems.

### Future initiatives

In order to further increase the percentage of recycled plastics used in our products, we will secure a supply of waste plastics as well as develop new uses for recycled plastics in all product groups.

* [Amount of recyclable plastics] / [Amount of plastics used for products] × 100

**Amounts and percentages of recycled plastics used**




Post-consumer recycled materials vary in quantity available and quality depending on how they are obtained. At times, we may need to use virgin materials due to insufficient supply or quality problems.

## 3R initiatives for packaging material

We will streamline the use of packaging as well as product materials to reduce environmental impacts throughout their entire life cycles.

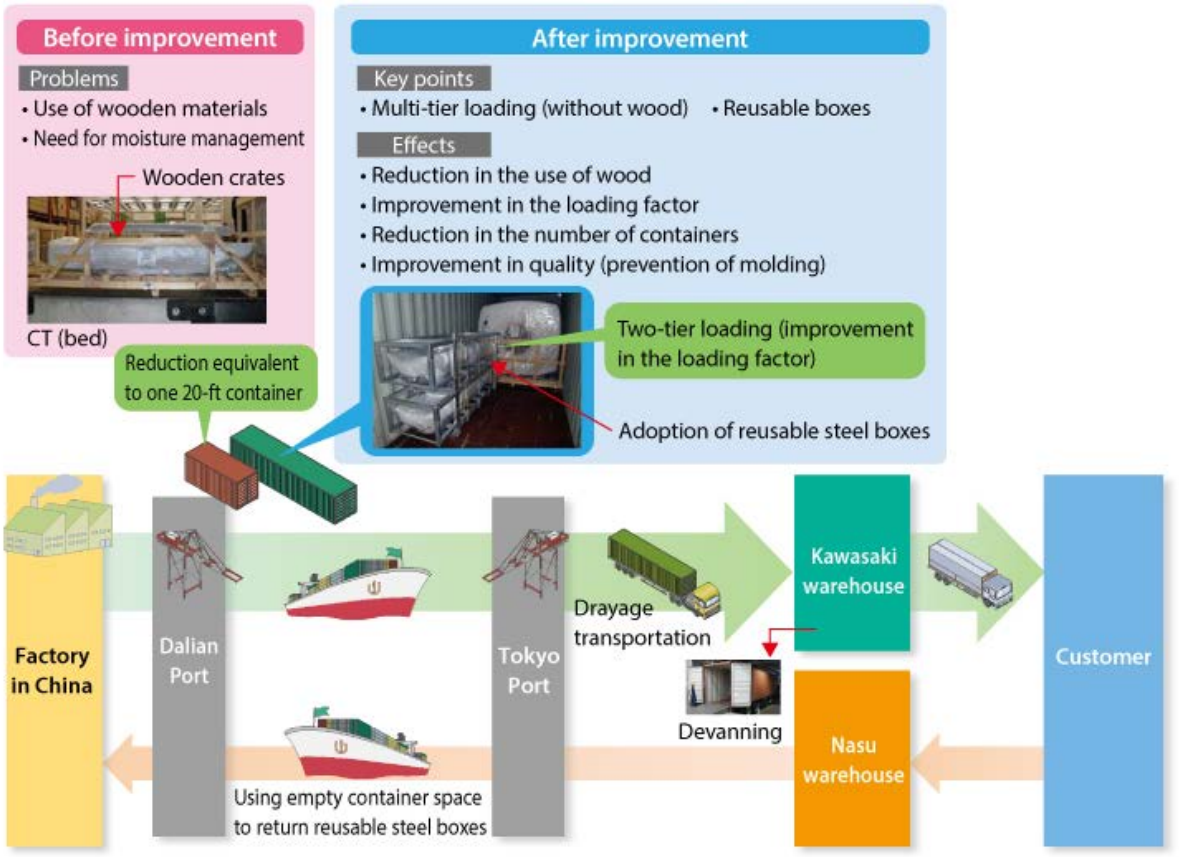
The amount of packaging materials used by Toshiba Group in FY2013 was approximately 68,000 tons. We will work to reduce the use of packaging materials in accordance with the characteristics of each business area and product category through various measures, such as reducing packaging volume, enlarging the size of returnable (reusable) cases and using materials with low environmental impact.

### Case Study 2: Replacing wooden packages for CT systems

**Toshiba Medical Systems Corporation**

We replaced the conventional wooden crates, which generated large amounts of wood waste and required moisture management, with reusable steel boxes. This reduced consumption of wooden materials and also enabled two-tier loading, thereby improving the loading factor. $CO_2$ emissions were reduced by 206 kg through reductions in the use of wooden

materials and by 1,608 kg through improved transportation efficiency.



# Initiatives regarding the assessment of water footprints

## Initiatives regarding water resources

The water footprint (WF) of a product is an assessment of its effects on water resources throughout its life cycle. Toshiba has started to estimate WFs for its products, an industry first, in order to assess the effects of its business on water resources.

### Results of FY2013

We estimated the amount of water consumed in Toshiba Group's business activities. The results of our estimation showed that groundwater is used in large amounts in manufacturing processes and also that water is consumed in large amounts indirectly as a result of power consumption during the use of products and services.

As an international expert member, Toshiba Group participated in establishing process of standardization for principles and requirements regarding WFs in ISO/TC207 (environmental management)/SC5 (life cycle assessment). We presented our opinion from a corporate standpoint in order to help establish more practical procedures. We are also participating in the Ministry of the Environment's formulation of estimation guidelines.

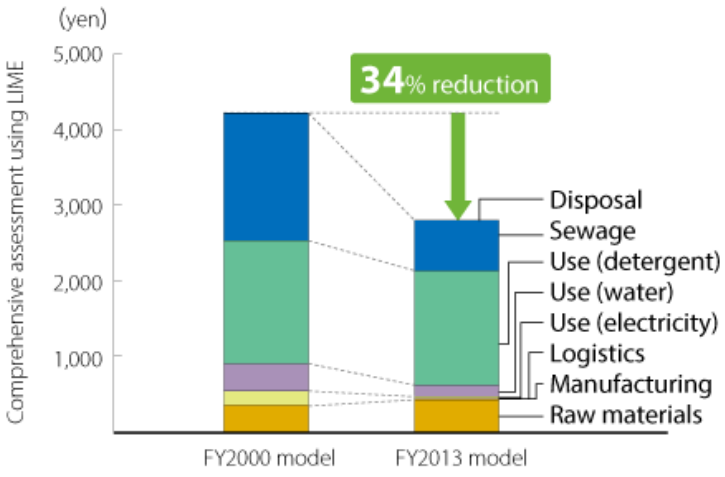
### Future initiatives

We will continue to improve our method for assessing environmental effects and to expand the scope of assessment. At the same time, we will also take an active part in establishing international standards.

### Case Study: Water footprints for washer/dryers

**Toshiba Lifestyle Products & Services Corporation**

It is necessary to assess environmental impacts for water resources in both quantitative and qualitative terms. The FY2013 washer/dryer model TW-Z96X1 reduces water consumption throughout its life cycle by 60% compared to the FY2000 level, and its total impact on water resources, including eutrophication potential, has been reduced by about 34%. In Japan, the effects of water quality deterioration attributed to upstream manufacturing processes and domestic wastewater are said to be larger than those on human health attributed to water shortages.



# Management of Chemicals in Products

**In addition to ensuring proper management of chemicals contained in products, Toshiba Group also promotes communication of information on such chemicals in order to minimize risks to human health and the global environment.**

## Initiatives for the management of chemicals contained in Toshiba Group products

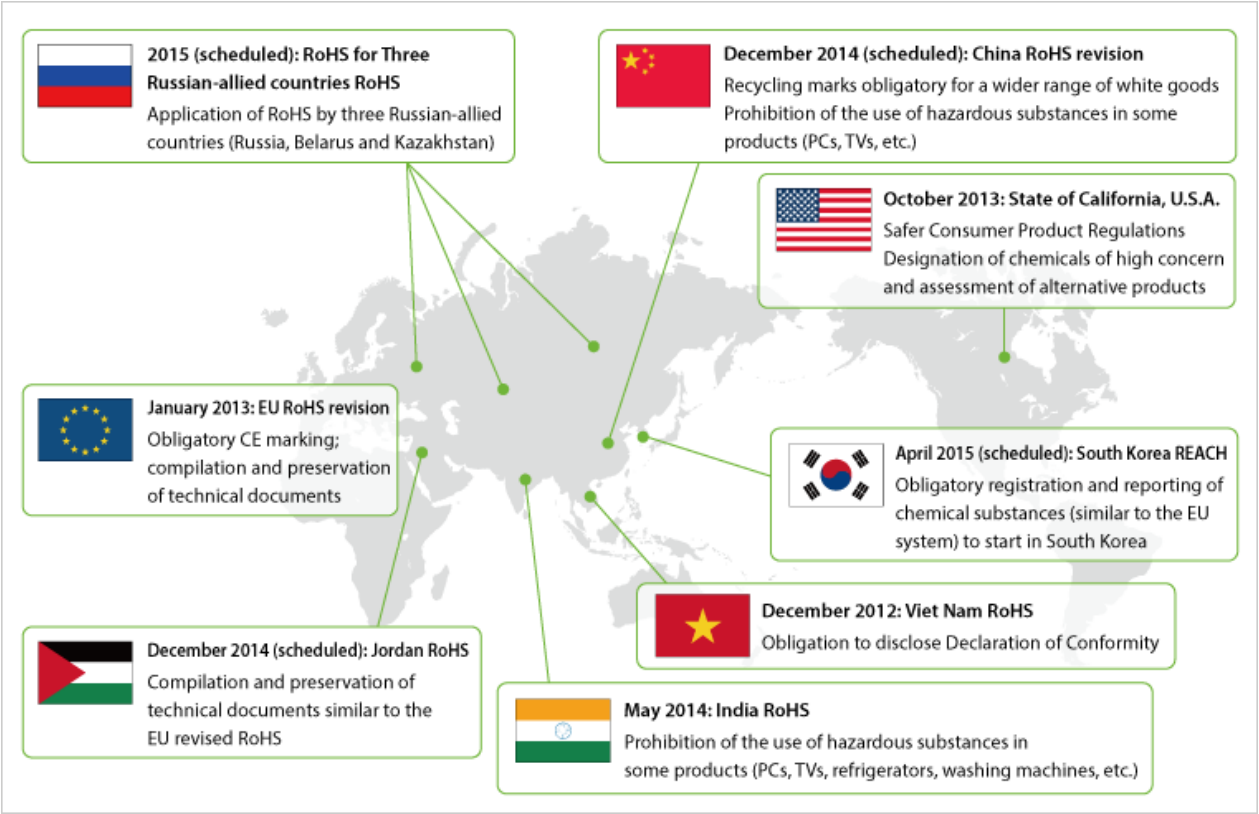
Toshiba Group manufactures and sells a wide range of products, from electronic parts (e.g., semiconductors and hard disks) to home appliances (e.g., refrigerators, washing machines and air conditioners) to audio-visual products (e.g., PCs and TVs) and social infrastructure products (e.g., medical equipment, transformers and weather radars). Various chemicals are used to manufacture these products. In recent years, regulations on the management of chemicals have become increasingly strict in countries around the world. For example, the EU revised the RoHS Directive*1 in January 2013 and expanded the restriction of certain hazardous substances to all electric and electronic products. In July 2014, medical equipment became subject to RoHS restrictions. In addition to the EU, three Russian-allied countries, Jordan, and other countries are preparing to implement similar directives. (For details, see the figure below.) Similar movements are taking place in countries around the world. Against this background, we are collaborating with the Local Environment Division to collect, aggregate and analyze the latest information on relevant regulations in order to implement appropriate measures for ensuring legal compliance. Furthermore, Toshiba Group has its own standards for the management of chemicals; these standards are applied worldwide to all its products so that customers can use Toshiba products with a sense of security. With a view to achieving the goal of minimizing risks involved in the use of chemicals in accordance with the precautionary principles, which was proposed and adopted at the World Summit on Sustainable Development (WSSD*2) and other conferences, Toshiba Group has been promoting initiatives to eliminate the use of specified chemicals, to reduce the amount of chemicals contained in products and to use substitute materials. As part of these initiatives, we have selected chemicals whose use is restricted by typical laws in Japan and elsewhere and chemicals that Toshiba Group is managing on voluntary basis and created the Toshiba Group Environment-related Substance List in order to manage the chemicals contained in products by grouping substances into two categories: rank A (prohibited substances) and rank B (managed substances). (For details, see the table below.)

**Toshiba Group Environment-related Substance List**

| Category | Definition |
|---|---|
| Rank A<br>(Prohibited Substances) | Substances whose presence is prohibited in procurement items (including packaging) in the Toshiba Group. Substances whose use in products (including packaging) is prohibited or restricted by domestic and foreign laws and regulations. |
| Rank B<br>(Managed Substances) | Substances whose environmental impact should be reduced, based on their actual usage, via reduction of use and substitution, or recovery and detoxification in a closed system. |

Due to industry trends and other circumstances, details of the management of chemicals (substances managed, management levels, threshold values, etc.) may differ among Toshiba Group companies.

**Examples of regulations on chemicals contained in products in different countries**




*1 RoHS (Restriction of certain Hazardous Substances) directive: A directive which limits the use of specified hazardous substances in electrical and electronic devices

*2 WSSD: World Summit on Sustainable Development

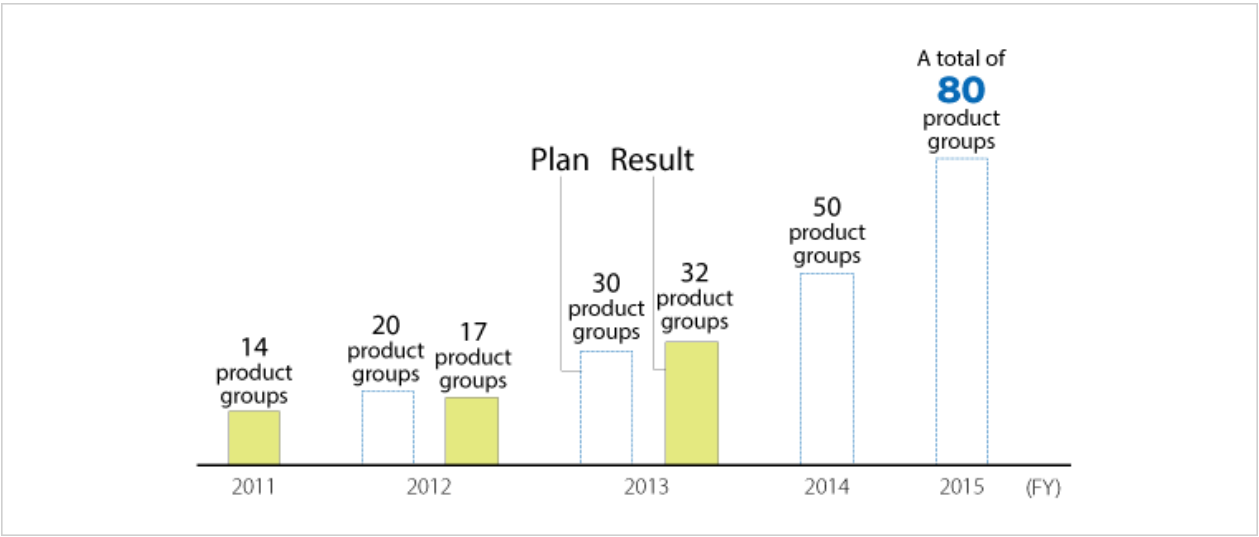
## Promoting the use of alternatives to PVC/BFRs

### Results of FY2013 and future initiatives

In the Fifth Environmental Action Plan, which started in FY2012, we set a goal of using substitute materials to replace polyvinyl chloride (PVC) and brominated flame retardants (BFRs)*3 contained in products across a total of 80 product groups in FY2015.

In FY2013, we reduced the use of PVC and BFRs mainly in social infrastructure products and achieved our goal for 32 product groups, exceeding the goal of 30 product groups (see the examples below). We will continue to use alternatives to PVC mainly for wiring and electronic components and alternatives to BFRs chiefly for casings, covers, and mounted parts.

**Changes in product groups covered by the PVC/BFR substitution initiative**



*3 Major restrictions regarding polyvinyl chloride (PVC)/brominated flame retardants (BFRs): PVC is an additive used to soften resin (generally known as a plasticizer) and is subject to restrictions in many countries.

Example 1: Phthalate esters (DEHP, BBP, DBP and DIBP) contained in PVC: European REACH Regulations (Substances subject to approval and restrictions [under review] and) high-priority substances under the revised RoHS Directive

Example 2: Organic tin compounds (DOP and DBP) contained in PVC: European REACH Regulations (substances subject to restrictions)

Example 3: Hazard assessments are currently performed in many countries for a variety of BFRs other than the specified flame retardants (e.g., PBDE and PBB) prohibited by the RoHS Directive.

### Case Study 1: POS terminal

**Toshiba TEC Corp.**

The M-8500 POS terminal is a product designed to reduce application standby power consumption to achieve the industry's highest energy-saving performance* . It also contains reduced amounts of chemicals (it is made of halogen-free materials and mercury- and cadmium-free parts).

* Toshiba data as of February 2014

**Use of halogen-free materials**

Halogen-free printed circuit boards are used for approximately 50% of the circuit board area to reduce the amount of BFRs.

**Mercury-free**

LED backlights are used for the main display to completely eliminate the use of mercury.

**Cadmium-free**

Nickel-hydrogen batteries are used instead of nickel-cadmium batteries for power outage backup to completely eliminate the use of cadmium.

## Initiatives for communication of information on chemicals throughout the supply chain

REACH*4 , the European regulations on chemicals that came into force in June 2007, mandates development of a system for effectively disclosing and communicating information on chemicals contained in parts, materials, and products throughout the supply chain. Toshiba Group has actively adopted the JAMP*5 /AIS*6 format, the industry's standard survey format, to promote effective communication of information on chemicals contained in products throughout the supply chain.

To promote business activities aimed at reducing the environmental impacts of hazardous chemicals and the risks involved in using them, it is essential to obtain the cooperation of suppliers, our business partners, for those activities for which the supply chain as a whole must be targeted. We request the understanding and cooperation of our suppliers in our green procurement initiatives aimed at creating a sustainable society. We also request that they make environmental assessments and conduct research on and evaluations of the chemicals contained in the materials and parts they supply and report the results of independent assessments on their level of green procurement (according to Toshiba's standards) in accordance with ISO 14001.

*4 REACH (Registration, Evaluation, Authorization and Restriction of Chemicals): Regulations on registration, evaluation, authorization and restrictions related to chemicals

*5 JAMP: Joint Article Management Promotion-consortium

*6 AIS (Article Information Sheet): JAMP-recommended information sheet used to communicate information on chemicals contained in products

**Suppliers' levels of green procurement for FY2013**

(%)

| Rank S | Rank A | Rank B | Lower than Rank B |
|---|---|---|---|
| 80.4 | 17.9 | 1.2 | 0.5 |

Note: Rank S (Priority), Rank A (Excellent), Rank B and Lower than Rank B (Improvement requested)

## Case Study 2: Digital X-ray TV system with FPD*1

**Toshiba Medical Systems Corporation**

The X-ray TV system Zexira DREX-ZX80 has the industry's highest level of energy-saving performance*2 and requires the least amount of space for installation (lowest test room ceiling height). PVC-free materials are used mainly for the parts that are likely to come into contact with medical technologists and patients, including the bed cover, operating table cover, and high-pressure cable duct cover (some parts excluded). The system contains reduced amounts of chemicals, including GFRP, which is difficult to recycle.

*1 FPD: Flat Panel Detector

*2 Toshiba data on the domestic market

**Use of lead also reduced**

The amount of lead for shielding was also reduced through use of the FPD system (compared to Toshiba's previous models in the same class).

# Product Eco-efficiency

## Eco-efficiency

The concept of eco-efficiency was developed to realize a sustainable society by providing products and services designed to improve the quality of life while reducing environmental impact.

The Factor indicates the degree of improvement in eco-efficiency by comparing to a benchmark period. Factor values of 4 and 10 are widely known as the targets required to realize a sustainable society. The greater its Factor, the more a product contributes to creating value and reducing environmental impact through technological progress and innovation.

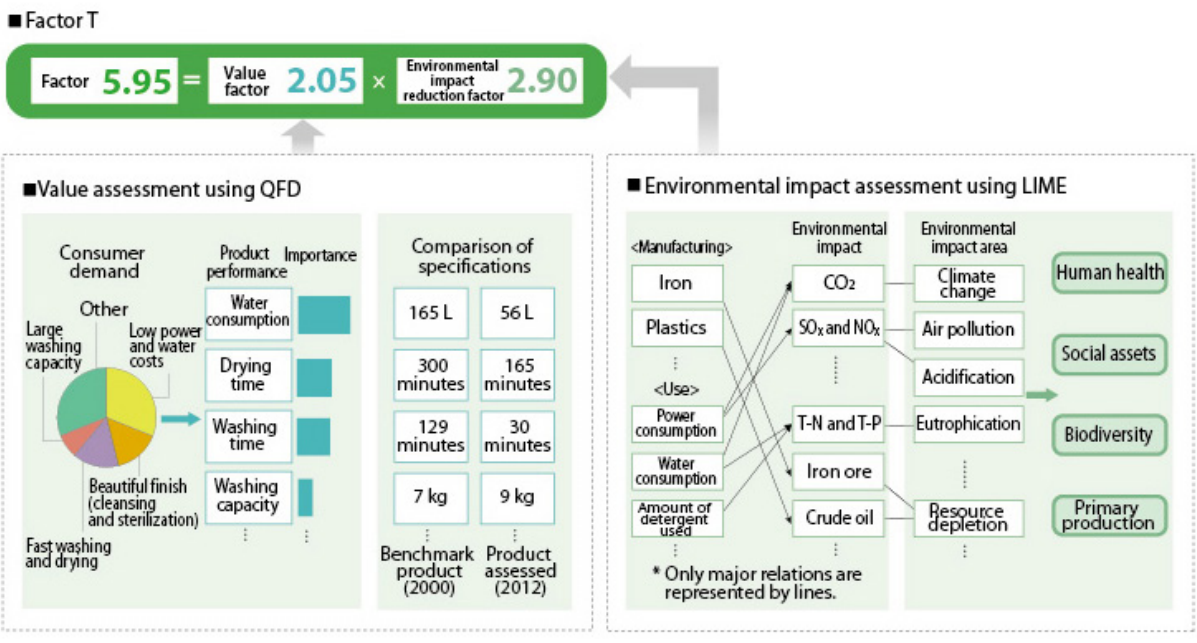
$$\text{Eco-efficiency} = \frac{\text{Value of product/service}}{\text{Environmental impact}}$$

$$\text{Factor} = \text{Degree of improvement in eco-efficiency compared to the benchmark period}$$

Toshiba Group originally developed a method for calculating eco-efficiency to introduce an indicator that enables overall assessment of products' environmental friendliness. Comprehensive activities for creating ECPs that are aimed at increasing the Factor are part of the Factor T initiative, so named after Toshiba's initial. Factor T has the following characteristics: ① it is expressed as a multiplication of a value factor and an environmental impact reduction factor; ② it quantifies the value of a product or service (numerator) using QFD; ③ it assesses environmental impact (denominator) using LIME*.

* LIME: One of the leading environmental assessment methods in Japan, LIME (Life-cycle Impact assessment Method based on Endpoint modeling) was developed by the Research Centre for Life Cycle Assessment, National Institute of Advanced Industrial Science & Technology, an independent administrative institution.

## Factor T



For detailed information about the calculation method and its application to Toshiba products, see the explanatory materials ("[Factor T] Reader" and "Encouragement of [Factor T]."


(In Japanese Only)


(In Japanese Only)

These materials were awarded the Bronze Award in the 2013 Nikkei BtoB Advertising Award's product catalog (general) category.

The Factor T initiative was started in 2003. Under this initiative, we have carried out various activities involving parties inside and outside Toshiba Group, including the announcement of Environmental Vision 2050, formulation of Environmental Action Plans, conferences with competitors aiming at standardization, and contribution to the establishment of ISO standards. Toshiba Group will continue to pursue the Factor T initiative in order to work toward realizing a sustainable society by incorporating new knowledge.

## Development of LCA and the Concept of Eco-efficiency in Toshiba Group

### Factor T

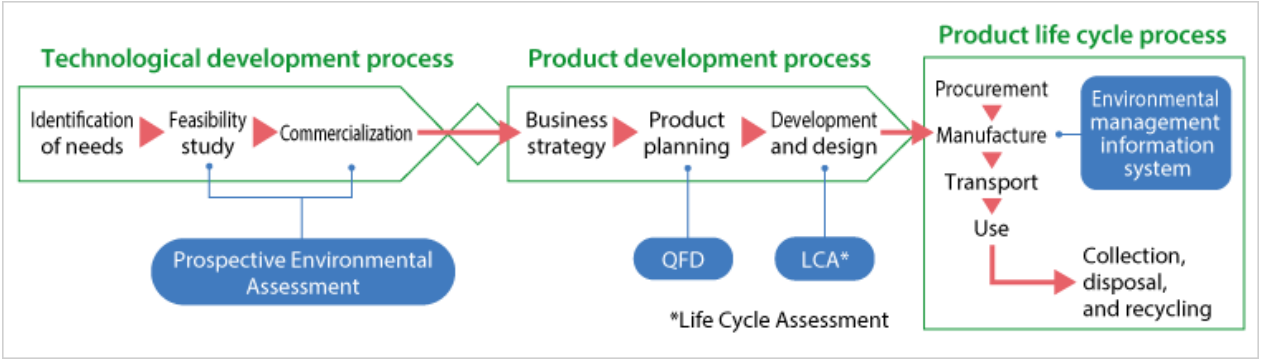
**Toshiba Group continues to promote the creation of ECPs by comprehensively considering the environment and value creation.**

- We screen environmental effects from the research and development stage before commercializing products, thereby promptly analyzing the risks involved and increasing our market competitiveness. We create new value through value and concept innovation. (Column 1)
- By the end of FY2013, we completed the Factor assessment for all product groups. We are now measuring improvements in the eco-efficiency of all Toshiba Group's product groups. (For details, see P62)
- Toshiba was awarded the LCA Society of Japan 10th Anniversary Special Award. (Column 2)

### Life cycle management

**Improvement in environmental performance throughout product life cycles**

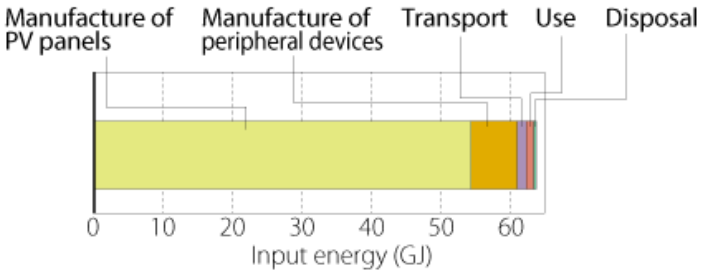
- We measure business process eco-efficiency and develop measures to reduce the environmental footprints of products and organizations. We also improve productivity through process innovation. (For details, see P36 and P79)



## Column 1: Assessment of a compound semiconductor photovoltaic power generation system

In the initial stage of research and development before commercializing a product, Toshiba Group flexibly determines the range of product life cycle assessment and sets assessment indicators in order to provide an overview of the product and assess the risks involved. For example, for the compound semiconductor photovoltaic power generation system, we assessed the product's environmental performance using the Energy Payback Ratio (EPR). The EPR is the ratio of the amount of energy produced to the amount of energy consumed over the entire life cycle of the product. This is a typical indicator used to represent the environmental performance of energy supply systems. Assuming that the standard power output is 4 kW and the period of use is 20 years, we estimated the amount of energy consumed over the entire life cycle of the product to be 63.7 GJ. Meanwhile, from the panel transformation efficiency and average annual solar radiation in Japan, we estimated the production energy over its life cycle to be 791 GJ. Therefore, the product's EPR is 12.4*. As product development proceeds, we assess other aspects of the product's effects on the environment, collect more accurate data, and assess the value of the system in order to make improvements.

* Shuto et al. (2014), *EPR of a Compound Semiconductor Photovoltaic Power Generation System, Proceedings of the Ninth Academic Conference of the Institute of Life Cycle Assessment, Japan*




## Column 2: Awarded the LCA Society of Japan 10th Anniversary Special Award

Toshiba Group started to use Factor-T in 2003 in order to develop and promote environmental efficiency assessment methods suited for different business areas. While focusing primarily on consumer products, the Group has developed assessment methods for the products of all Group companies, including heavy electric products, semiconductor products, and solutions. In addition, we actively release information about our assessment results through a variety of media. We have also participated in establishing standards for Factor X with eight electrical manufacturers as well as ISO standards, not to mention the activities of industrial associations. Further, Toshiba Group has responded to new international trends ahead of our competitors. By making use of outside knowledge, we have conducted case studies on aspects of environmental impact that cannot be fully evaluated with conventional LCA, such as biodiversity, noise, and water resources. We are taking an active part in developing various applications related to LCA, including supporting the Scope 3 Standards and introducing our new concept “T-Compass.” We were awarded the LCA Society of Japan 10th Anniversary Special Award for these activities in recognition of our achievements in our industry. We will continue to promote LCA and the Factor approach in the future.

Corporate Senior Vice President Nishida delivering an address at the awards ceremony


## Toshiba Group's Approach in the Energy Sector

To achieve the goals of Environmental Vision 2050, Toshiba Group is promoting initiatives aimed at providing a stable power supply and mitigating climate change through its low-carbon energy technologies.

In the area of main energy, which supports our lives, we are working to develop technology for thermal and nuclear power generation. At present, we depend on fossil fuel for about 80% of the global energy supply, but thermal power generation emits more $CO_2$ than other power generation methods because $CO_2$ is produced when fossil fuels are burned. Therefore, we must step-up efforts to take measures to mitigate climate change by introducing the most advanced technology.

In addition to emitting less $CO_2$ than methods using other types of fossil fuel, the importance of power generation using gas for fuel is increasing because shale gas is now available. Combined cycle thermal power generation, which fuses cutting-edge, high-efficiency gas turbine and high-performance steam turbine with a power generator, is a thermal power generation system that is more efficient than conventional types, and Toshiba is actively promoting the power generation equipment it has developed, which is the most efficient in the world.

Coal has a higher reserve-production ratio than other types of fossil fuel; for economic reasons, coal-burning thermal power generation is expected to be introduced widely throughout Asia and other regions in the years to come. In order to mitigate climate change, it is important to introduce high-efficiency power generation equipment. Toshiba Group is striving to further improve the efficiency of coal-burning thermal power generation by working to realize coal-burning thermal power generation plants using advanced ultra-supercritical (A-USC) steam turbines by developing materials that can withstand high temperatures of 700°C and carrying out tests to verify the strength of turbine equipment.

Furthermore, the Group is working to develop test equipment for use in growing agricultural products by capturing $CO_2$ from incineration plants' exhaust gases as we strive to commercialize carbon capture and storage/carbon capture and utilization (CCS/CCU) technology. We are also working to develop a new thermal power generation cycle to make $CO_2$ capture easy. In these ways, we are pushing forward with the development of next-generation thermal power generation technologies.

On the other hand, nuclear power generation, which does not emit $CO_2$ when generating electricity, is positioned as an “important base-load electricity source” in the Japanese government's Basic Energy Plan. Toshiba Group has been involved in the construction of 112 nuclear power plants in 10 countries worldwide. In the United States and China, construction of new nuclear power plants is underway, and Toshiba is actively working to supply large-scale nuclear power generation equipment. At the Fukushima Daiichi Nuclear Power Station, we will contribute to initiatives for decommissioning the nuclear reactors, such as developing multi-radioactive nuclides removal systems to purify contaminated water quickly, using a remote-controlled robot to assess the site's condition, and removing debris from fuel pools.

Introducing renewable energy is a rising trend as we strive to mitigate climate change and cope with the depletion of fossil fuel resources. Toshiba Group has developed various power generation technologies, including those for photovoltaic, hydroelectric, geothermal, and wind power generation; we have delivered many systems using such technologies to our customers. We will work to further improve the efficiency of these technologies and systems as well as promote their proliferation.

In the area of hydroelectric power generation, in which we have delivered our systems in 40 countries worldwide, we are actively working to develop pumping-up power generation systems, which are effective for taking countermeasures against daytime peak electricity demand, as well as small hydroelectric power generation systems. In this way, we will continue to utilize hydroelectric power generation, the most widely used type of renewable energy.

We are also actively working to develop technology for wind power generation systems, which are expected to be introduced widely in the future, and photovoltaic power generation systems, which are coming into widespread use. Regarding photovoltaic

power generation, we are striving to spread high-efficiency photovoltaic power generation systems ranging from large photovoltaic power plants, which have been introduced in greater numbers since the feed-in tariff system for renewable energy began, to those for industrial and residential use.

Going forward, as energy demand is expected to increase in emerging economies, Toshiba Group will continue to contribute to the realization of low-carbon societies at the global level by offering high-efficiency power generation equipment and helping expand supplies of renewable energy.

Since power generation using renewable energy is often affected by weather conditions and it is difficult to consistently obtain a fixed level of output, the effects of such power generation on the electric power system become a problem as the amount of electricity generated using such systems increases. To solve this problem, Toshiba Group is actively developing and commercializing stationary storage battery systems that combine monitoring and control technology (EMS) with storage batteries.

In the area of power transmission and distribution, which helps supply electricity to users such as factories, offices, and residences in a stable manner, Toshiba Group is working to develop a wide range of technologies based on know-how acquired through many test projects with the aim of realizing smart grids (next-generation power transmission and distribution systems), which are intended to optimize the balance between energy supply and demand mainly through effective use of renewable energy. Moreover, as an extension of these efforts, we will contribute to the realization of smart communities featuring water supply, gas supply, and transportation systems---this is the vision of communities that we aim to create in the future with smart grids.

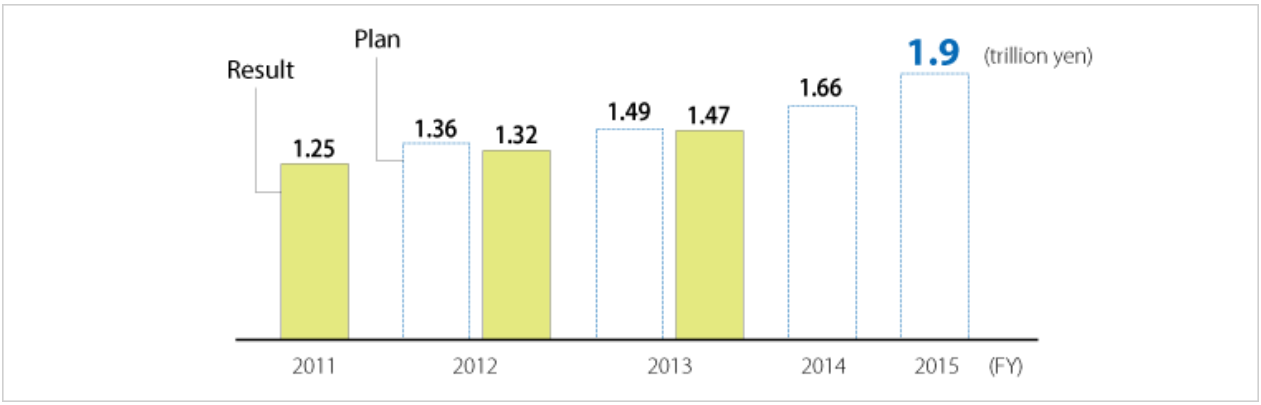
## Aiming to increase sales of energy-related products to 1.9 trillion yen and reducing $CO_2$ emissions by 490 million tons in FY2015

The Fifth Environmental Action Plan calls for Toshiba Group to address two indicators in the energy sector: the amount of $CO_2$ emissions of energy-related products and sales of energy-related products.

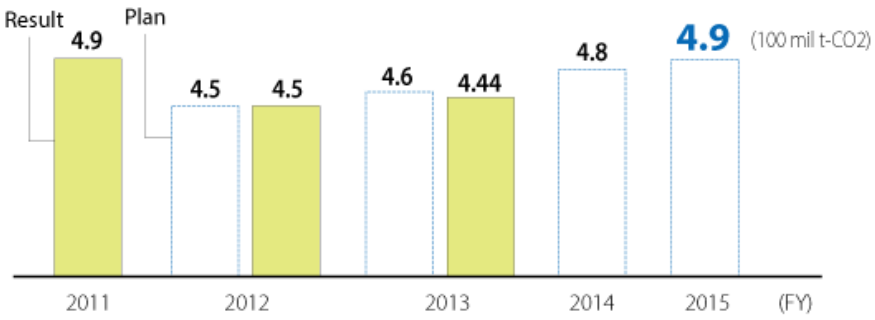
### Results of FY2013 and future initiatives

While we are making progress mainly by increasing $CO_2$ emissions reductions through high-efficiency thermal power generation, some goals have not been attained due to delays compared to initial plans with respect to the start of operation of plants under construction. However, we aim to increase sales of energy-related products to 1.9 trillion yen and reduce $CO_2$ emissions by 490 million tons in FY2015 by spreading high-efficiency thermal power generation and renewable energy, mainly through delivery of a combined cycle thermal power generation system to the Ishikari Bay new port power plant in Hokkaido and a power generation system to a geothermal power plant in Turkey. In this way, we will contribute to ensuring a stable power supply and mitigation of climate change.

**Sales for energy-related products**



**Reduction in $CO_2$ emissions through energy-related products**



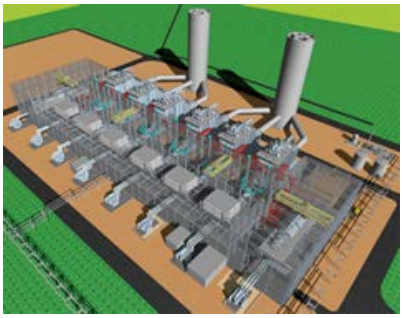
# Main Energy

**In order to provide a stable energy supply and prevent global warming, Toshiba Group is developing technologies to prevent $CO_2$ emission of thermal power generation as well as actively developing and spreading renewable energy technologies such as those for hydroelectric, geothermal, wind, and photovoltaic power. The Group is also making continued efforts to ensure the safety of nuclear power generation.**

## Thermal power generation

### Receiving orders for two plants to provide combined cycle thermal power generation system with the world's highest level of efficiency (≥62%)

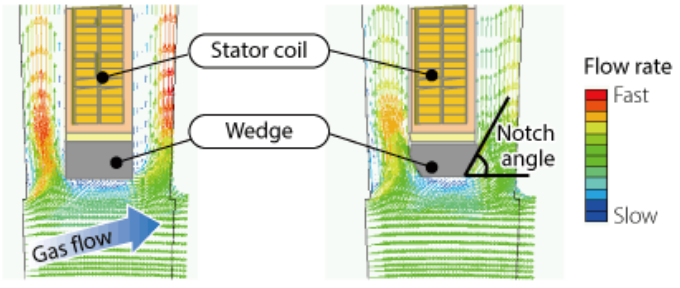
Combined cycle thermal power generation is a power generation method that combines gas turbines and steam turbines. By using exhaust gas energy, the combined cycle thermal power generation system improves efficiency and reduces $CO_2$ emissions per kilowatt-hour of electricity compared with coal-fired conventional thermal power generation. Having developed a thermal power generation systemwith the world's highest level of efficiency (≥62%) (lower heating value basis), Toshiba won an order from the Chubu Electric Power Company and is now building a system for the Nishi-Nagoya thermal power station. In addition, we recently won an order for thermal power generation equipment for the Hokkaido Electric Power Company's Ishikari Bay new port power station. We will continue to further improve efficiency and contribute to reducing $CO_2$ emissions.



Overview: Combined cycle thermal power plant

### High-efficiency technology for turbine generators

As needs for combined cycle thermal power generation plants grow, it is required for manufactures to produce the high-efficiency medium-capacity turbine generators (300 MVA class) used for these plants. In order to realize such high-efficiency generators, Toshiba developed the optimal design method for automatically calculating a minimum-weight generator appropriate for the target efficiency. In order to reduce the loss of each generator structure, we also developed measures to reduce windage loss through fluid analysis, reduce bearing friction loss using improved oval bearings, and reduce stray load loss through three-dimensional magnetic field analysis. Application of these high-efficiency technologies has enabled the design of a turbine generator that improves efficiency by approximately 0.2% compared to conventional models.




Reducing windage loss by improving the cross-sectional structure of stator coils

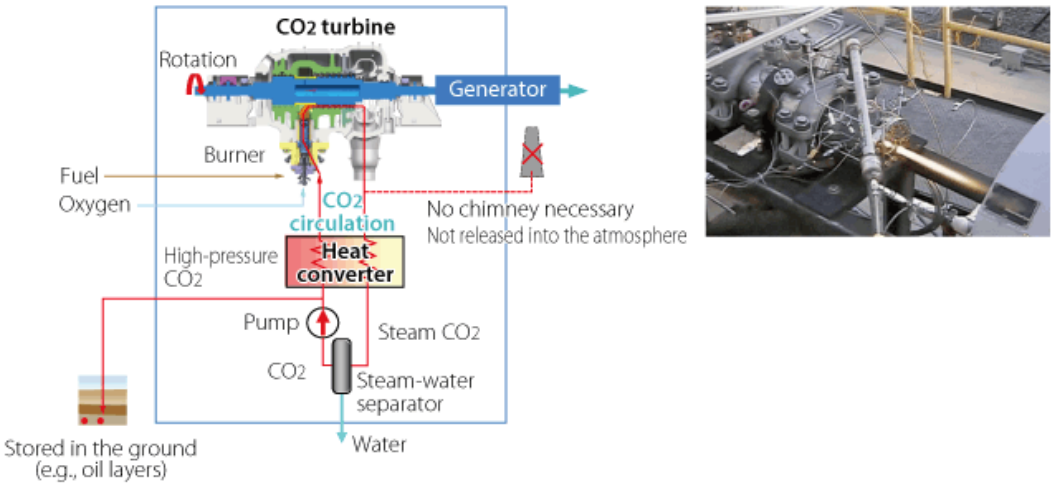
## Steadily commercializing carbon capture technology

In order to commercialize technology for capturing $CO_2$ from exhaust gas emitted from thermal power plants, Toshiba is planning to build commercial plants and proposing applications of our system to potential customers based on know-how gained through over 8,100 hours of verification tests at the Mikawa pilot plant in Fukuoka Prefecture. In October 2012, as part of the Plant Biomass Energy Utilization Project for Saga City's Incineration Plant, we delivered test equipment to capture $CO_2$ from the incineration plant's exhaust gas for use in growing agricultural crops and algae. This equipment enables the plant to capture $CO_2$ at a purity rate of over 99%, one of this technology's distinctive features.

Test equipment to capture $CO_2$

## Development of a new thermal power generation system that emits no $CO_2$ into the atmosphere

Toshiba is working to develop the world's first thermal power generation system that operates turbines using high-temperature, high-pressure supercritical $CO_2$. Use of supercritical $CO_2$ enables realization of high-efficiency, compact power generation systems. Since $CO_2$ circulates within the system and is partly removed for storage in the ground, no $CO_2$ generated from combustion is released into the atmosphere. We are currently working to develop a high-temperature, high-pressure $CO_2$ turbine and a burner for commercialization.

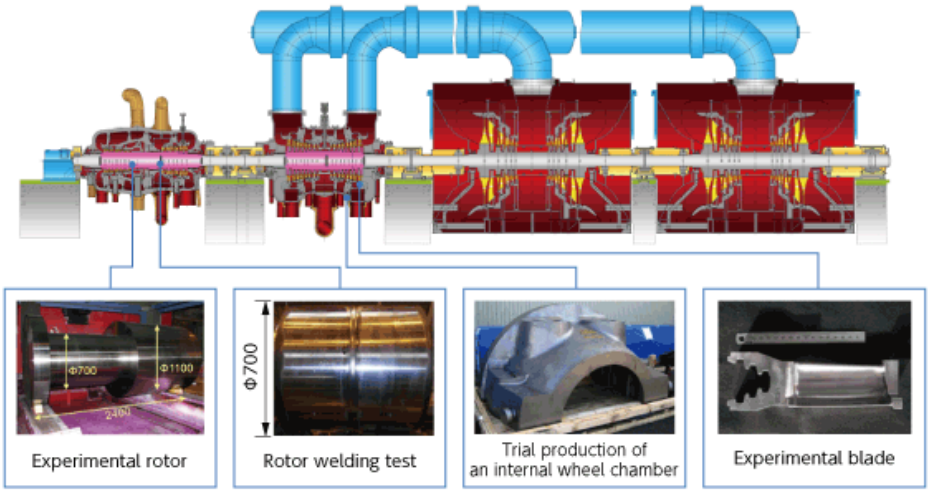



Actual-pressure combustion test (Toshiba succeeded in achieving combustion at the target atmospheric pressure of about 300,000 hectopascals.)

### Case Study: Development of A-USC steam turbines

Coal, which can be found in abundance in various parts of the world, is an important fossil fuel for ensuring a stable energy supply. In an effort to use coal efficiently, Toshiba is working to develop thermal power generation using advanced ultra-supercritical (A-USC) steam turbines. By raising the temperature of steam used to 700°C, A-USC steam turbines improve efficiency by approximately 10% compared to conventional systems, thus reducing $CO_2$ emissions. Commercialization of A-USC steam turbines requires materials that can withstand a high temperature of 700°C; we are working to develop such materials and conducting tests to verify the strength of our turbine equipment.

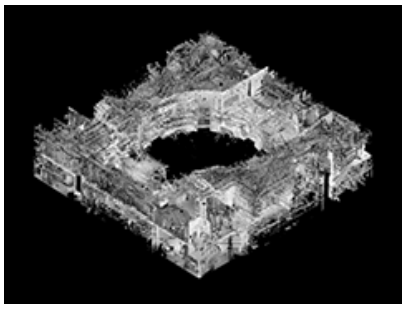
**A-USC steam turbine**




## Nuclear power generation

### Striving to the utmost to stabilize the operation of the Fukushima Daiichi Nuclear Power Station and to facilitate decommissioning of the reactors

Working in cooperation with the government and Tokyo Electric Power Company, Toshiba Group is striving to the utmost to stabilize the operation of the Fukushima Daiichi Nuclear Power Station, which was seriously damaged by the March 11, 2011 earthquake, as well as to facilitate the decommissioning of the nuclear reactors. In an effort to decontaminate water as early as we can, we have developed and started to install an improved Multiple Radio-nuclides Removal System that has a high operating rate in addition to the one currently in operation. We also aim to produce a highly reliable tanks manufactured by welding to store decontaminated water safely and install it by the end of the target construction date. As part of efforts to decommission the nuclear reactors, we used a remote-controlled robot to obtain CAD images of the inside of the reactor building of Unit 2 by 3D laser scanning, so we could understand the latest condition of the reactor building. At Unit 3, decommissioning of the nuclear reactor started when we began to remove debris from the fuel pool in order to remove spent fuel from the fuel pool as early as we can. We will continue to contribute to facilitating the decommissioning of the nuclear reactors by offering innovative technologies.



3D-CAD image of the inside of the reactor building of Unit 2

Multiple Radio-nuclides Removal System

### Initiatives for building nuclear power stations and improving their safety

The global primary energy demand is predicted to increase to about 1.3 times the current level by 2035*. At present, we depend on fossil fuels for about 80% of our energy supplies. Under these circumstances, even in the aftermath of the March 11, 2011 earthquake, there continues to be demand for nuclear power generation worldwide as a means of ensuring that power supply meets growing needs for electricity without emitting $CO_2$. In China, Westinghouse Electric Company, a member of Toshiba Group, is currently building four advanced pressurized water reactors (AP1000™), and in the United States, it is also constructing four AP1000™ reactors.

Along with promoting nuclear power generation, countries around the world are reviewing their safety standards and taking countermeasures against severe accidents based on the lessons learned from the accident at the Fukushima Daiichi Nuclear Power Station. Toshiba will continue to make efforts to further improve the safety of both new nuclear power plants and existing ones by taking these safety measures as well as those for severe accidents.

* Source: World Energy Outlook 2013

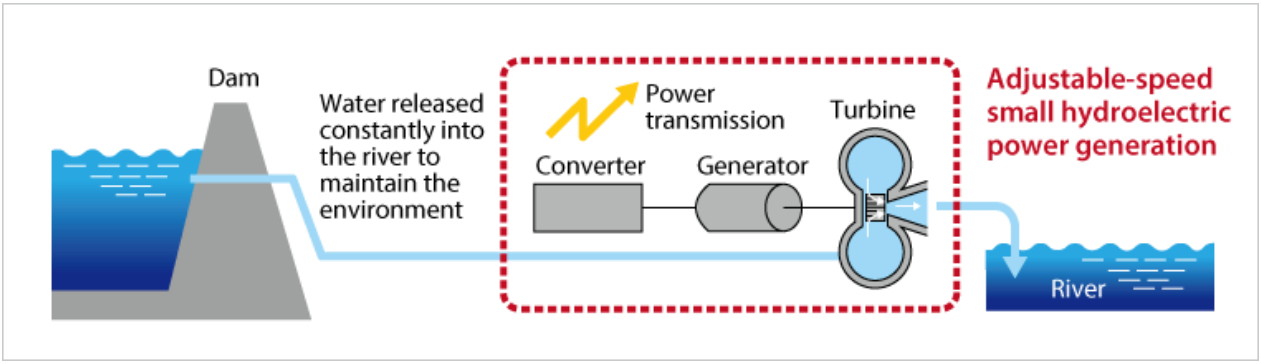
# Renewable Energy

## Growing into a company that plays a leading role in the use of renewable energy

In order to contribute to mitigation of climate change and effectively use limited fossil fuel resources, Toshiba Group is working to develop various power generation technologies that use renewable energy, including photovoltaic, hydroelectric, geothermal and wind power, and to promote the use of such technologies.

## Hydroelectric system

Toshiba has delivered about 2,000 units of both turbines and generators, totally over 56 GW of hydroelectric power generation equipment, to more than 40 countries around the world. We have the world's best-in-class technologies and achievements for pumped storage systems, in which water is pumped up using surplus power during nighttime and power is generated during daytime to offset power-demand peaks, as well as for adjustable speed pumped storage systems that are effective in power system stabilization. We also take an active part in developing small hydroelectric system technologies to make effective use of hydroelectric energy. We have developed adjustable-speed small hydroelectric power generation systems to effectively use specific amounts of water* released constantly into a river from dams where the water level fluctuates substantially. Our micro hydroelectric power generation system Hydro-eKIDS™ has also been well received. In the future, we will continue to develop and promote the use of hydroelectric power generation, the most frequently used type of renewable energy, by offering a wide range of product lineups, from large-capacity to small hydroelectric systems.



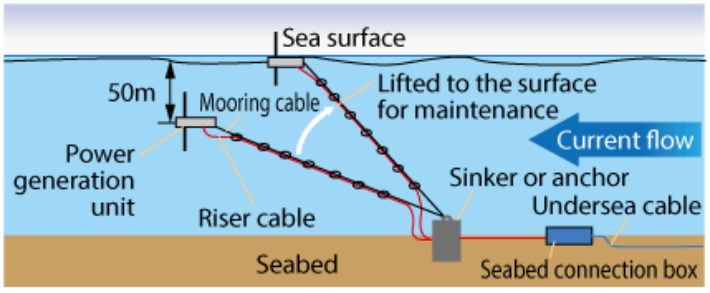

Structure of an adjustable-speed small hydroelectric power generation system

* To maintain the environment downstream of dams, a specific amount of water is constantly released into the river from the dams even during periods other than floods and irrigation.

### Case Study: Development of ocean current power generation systems

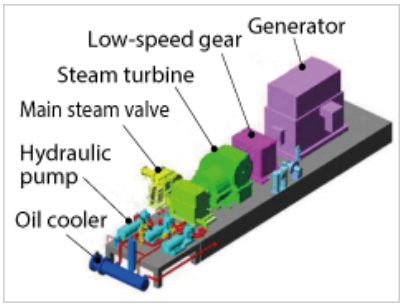
Toshiba is working to develop ocean current power generation systems as a clean, stable power source; such systems make use of the huge amounts of energy generated by currents running along the coast of Japan throughout the year, such as the Japan Current (Kuroshio). By mooring these systems on the seabed, letting them float at sea, and allowing them to respond to currents running in the deep sea, they can be operated stably without being affected by vessels or waves. By NEDO's support, we are developing element technologies required for various types of equipment, including turbines, generators, power transmission systems, and floating bodies.

**Conceptual diagram of an ocean current power generation system floating at sea**




## Geothermal power generation

Toshiba delivers facilities equivalent to 23% of the world's total geothermal power generation capacity. Based on the temperature properties of geothermal sources, we provide optimal geothermal power generation systems, including flash steam systems, binary cycle systems, and flash-binary systems that use the two systems in combination. We also promote the use of Geoportable™, a newly developed 2-MW compact geothermal power generation system. Geoportable™ has a small footprint and contributes to effective use of untapped geothermal energy in locations with only one or two geothermal wells. At present, we are building large-capacity geothermal power plants in Kenya, Indonesia, and Turkey.




Compact geothermal turbine generator

## Wind power generation

Toshiba provides the optimized solution from site planning, construction, commissioning, to operations & maintenance.

Toshiba also promotes the wind farm control and wind - battery system to maximum power generation and to minimize power fluctuation.

## Photovoltaic power generation

### Promoting the use of high-efficiency photovoltaic power generation systems for power plants, factories, and homes

In order to contribute to the mitigation of climate change and effective use of limited fossil fuel resources, countries around the world are promoting the use of photovoltaic power generation; in Japan, too, public-private partnerships for its wider use are in progress.

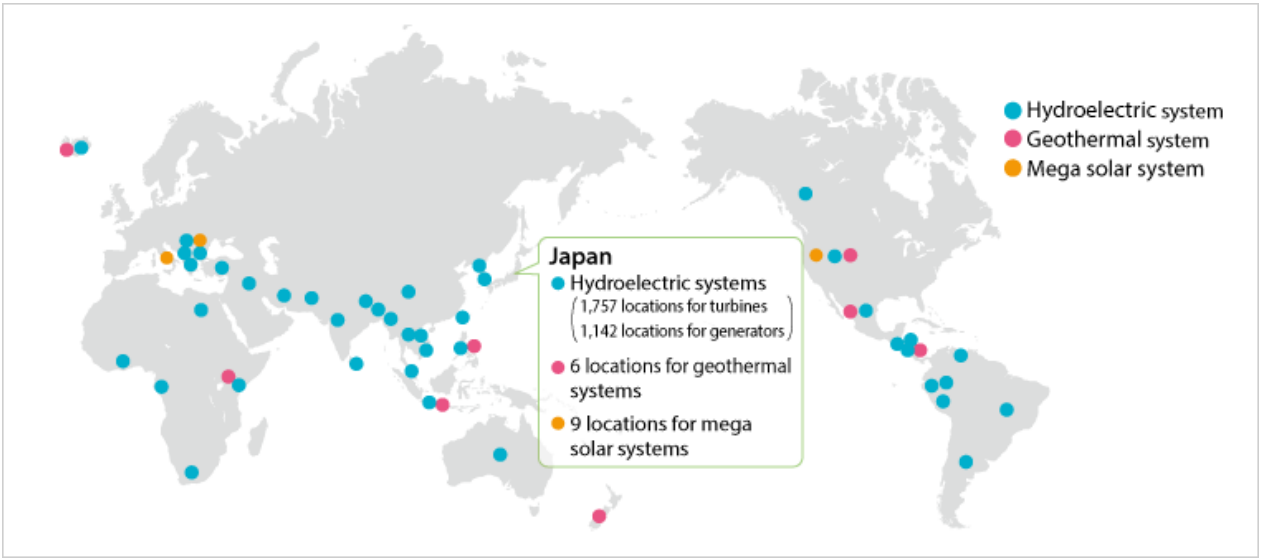
250-W solar battery module

Toshiba Group contributes to reducing $CO_2$ emissions by promoting use of photovoltaic power generation systems that achieve the highest level of efficiency and long-term stability in power plants, factories, and homes.

Toshiba Group provides total support for industrial photovoltaic power generation systems, from system development to construction and maintenance. We make the most of the comprehensive engineering capabilities we have cultivated through our years of experience, such as construction of mega solar systems for electric power companies. Thus, our mega solar systems achieve the highest level of efficiency and long-term stability. Boosted by the tailwind of the feed-in tariff system for renewable energy, which started in July 2012, we have won orders for the construction of large-scale photovoltaic power plants such as Tahara City's joint solar and wind project (50 MW) and Idemitsu Kosan's Himeji photovoltaic power plant (14.7 MW). We are also increasing sales of solar battery modules for other contractors responsible for engineering, procurement, and construction of photovoltaic power plants, thereby contributing to reductions in $CO_2$ emissions.

In the area of residential photovoltaic power generation systems, we began selling a 250-W solar battery module with the world's highest conversion efficiency, 20.1%, in December 2012. The conversion efficiency of this module has already exceeded the 2020 goal (20%) for service modules set by NEDO in the photovoltaic power generation roadmap. Thanks to its high efficiency, Toshiba's system that uses this globally leading module generates a large amount of power per area, thereby further contributing to reducing $CO_2$ emissions.

**Delivery of power generation systems (hydroelectric, geothermal and mega solar systems)**



# Power Transmission and Distribution Technology

**In order to ensure a stable power supply when large amounts of renewable energy, such as photovoltaic and wind power generation, are introduced, Toshiba Group is developing and providing diverse storage battery solutions with its SCiB™ rechargeable batteries.**

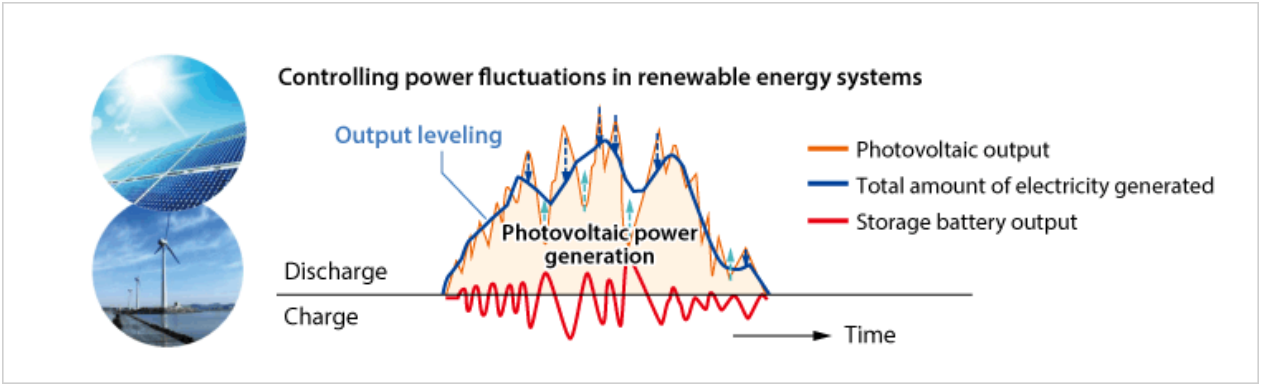
## Stationary storage battery systems, an important trump card for spreading renewable energy

Power generation with renewable energy such as wind and photovoltaic power rather than fossil fuels is attracting public attention as a means of mitigating climate change and is actively being introduced in Japan as well as in overseas countries, especially in Europe. Since power generation using renewable energy is often affected by weather conditions and it is difficult to consistently obtain a fixed level of output, the effects of such power generation on the electric power system become a problem regarding, for example, fluctuation in voltage and frequency, as the amount of electricity generated using such systems increases. To solve this problem, Toshiba Group is actively developing and commercializing stationary storage battery systems that combine monitoring and control technology (EMS) with storage batteries.

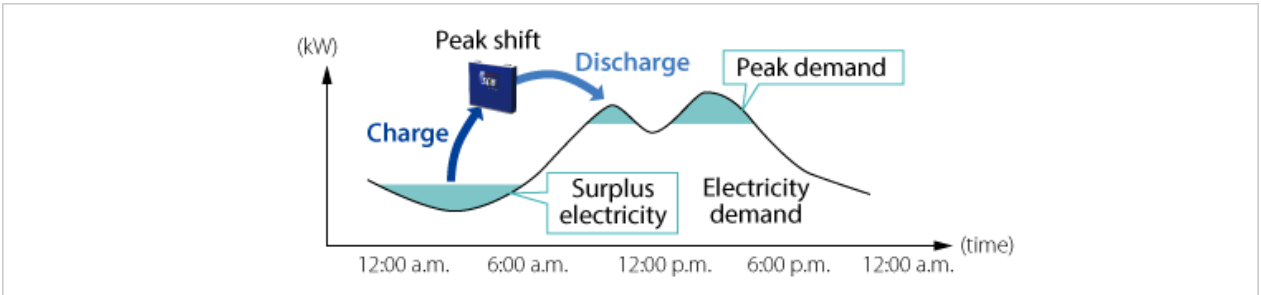
## Smart battery solutions to contribute to a stable power supply

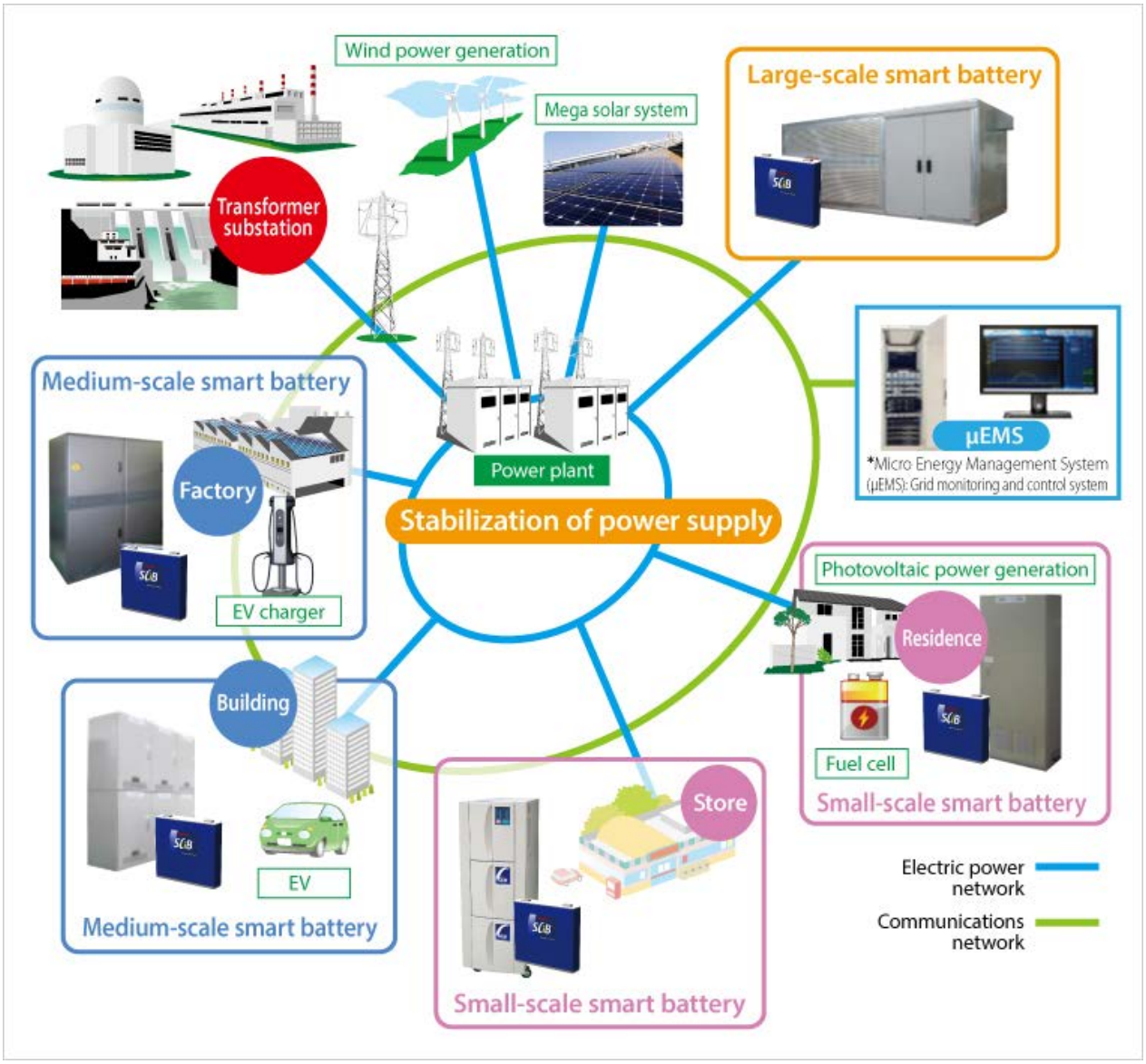
Smart batteries are part of the stationary storage battery system proposed by Toshiba. Toshiba's SCiB™ rechargeable lithium ion batteries control sharp output fluctuations through smooth absorption when renewable energy systems are linked, achieving load leveling through peak shifts and peak cuts by charging the batteries during the night when demand is low and discharging electricity during the day when demand peaks. Thus, they are highly scalable, covering a wide range of systems including those offered for commercial, industrial, and residential use as well as large-scale electric power systems. As we strive to mitigate climate change, we will contribute to the realization of a low-carbon society by providing smart battery solutions that combine multiple smart batteries.

**Electric power system-side solutions**




**Consumer-side solutions**






## Large storage battery systems

As part of the Yokohama Smart City Project (YSCP), verification tests for the storage battery SCADA (Supervisory Control And Data Acquisition) began in October 2012. By allowing system operators to control and operate multiple batteries as a single virtual battery, storage battery SCADA enables storage battery systems to be used as a power source to adjust electricity supply and demand by region, thus contributing to a stable electricity supply through peak shifts and load frequency control (LFC).


Storage battery for adjusting supply and demand

### Home storage battery systems

This stationary home storage battery system has a capacity of 6.6 kWh*1 and a maximum power output of 3.0 kVA*2. It can be rapidly charged in about two hours. This storage system not only supplies electricity to electrical appliances in the home*3 but also responds to sudden power failures and helps reduce power consumption during peak daytime hours by using electricity that is stored at night. When combined with photovoltaic power generation or an HEMS, this system contributes to daily power savings and reduction of $CO_2$ emissions*4.

*1 The amount of electricity that can actually be used by electrical appliances is reduced due to power conversion loss (about 6% at the time of rated output).

*2 This indicates rated output during normal use. The maximum power output is 2.0 kVA during a power failure; AC 100 V of electricity is supplied to selected loads.

*3 During a power failure, AC 100 V of electricity is supplied to selected loads

*4 There are cases in which $CO_2$ emissions cannot be reduced depending on how the electricity is used.

**As a conglomerate manufacturer of electric machinery, Toshiba Group provides the most advanced, optimal total energy solutions that combine products and systems across a wide range of areas, from power transmission/distribution systems to office buildings to housing, thus contributing to the realization of a low-carbon society.**

## Next-generation energy supply-demand control system developed by Toshiba, which plays a leading role in verification tests

Smart grid technologies are attracting attention as technologies for using renewable energy which are likely to be used more widely in the future. The amount of power generated by power generation methods relying on renewable energy sources such as sunlight and wind varies with the weather. Therefore, when renewable energy is introduced in large amounts, the frequency and voltage of power distribution systems will be affected and such fluctuations must be adequately controlled. Toshiba is working to commercialize community-wide energy control systems by combining output control functions that use storage batteries with functions for forecasting energy supply and demand.

For example, in the US state of New Mexico, a new initiative encouraging consumers to stabilize the system is underway; verification tests for demand response (DR*1) to maintain supply-demand balance by controlling electricity demand through consumer cooperation have already begun. We are also working to develop a standardized supply-demand control system for island countries/areas, where it is difficult to maintain balance between supply and demand.

## Contributing to the world with a wide range of solutions

Based on the power distribution technologies that it has developed in the past, Toshiba Group provides various smart grid-related solutions.

### μEMS*2: Grid monitoring/control device

The Micro Energy Management System (μEMS) is a core product that serves as the brain of a smart grid by monitoring and controlling the local supply and demand of electricity; this system ensures effective use of renewable energy and a more stable electricity supply. It improves overall energy efficiency by controlling electricity supply and demand, including absorbing variations in power consumption within a grid and minimizing the effects of these variations on the electricity network. It becomes particularly important to accurately forecast and control electricity supply and demand

with the introduction of photovoltaic power generation and large-scale transportation systems that feature electric vehicles, which may change the demand side considerably. μEMS provides automatic control of electricity supply and demand while monitoring and forecasting electricity demand in real time.

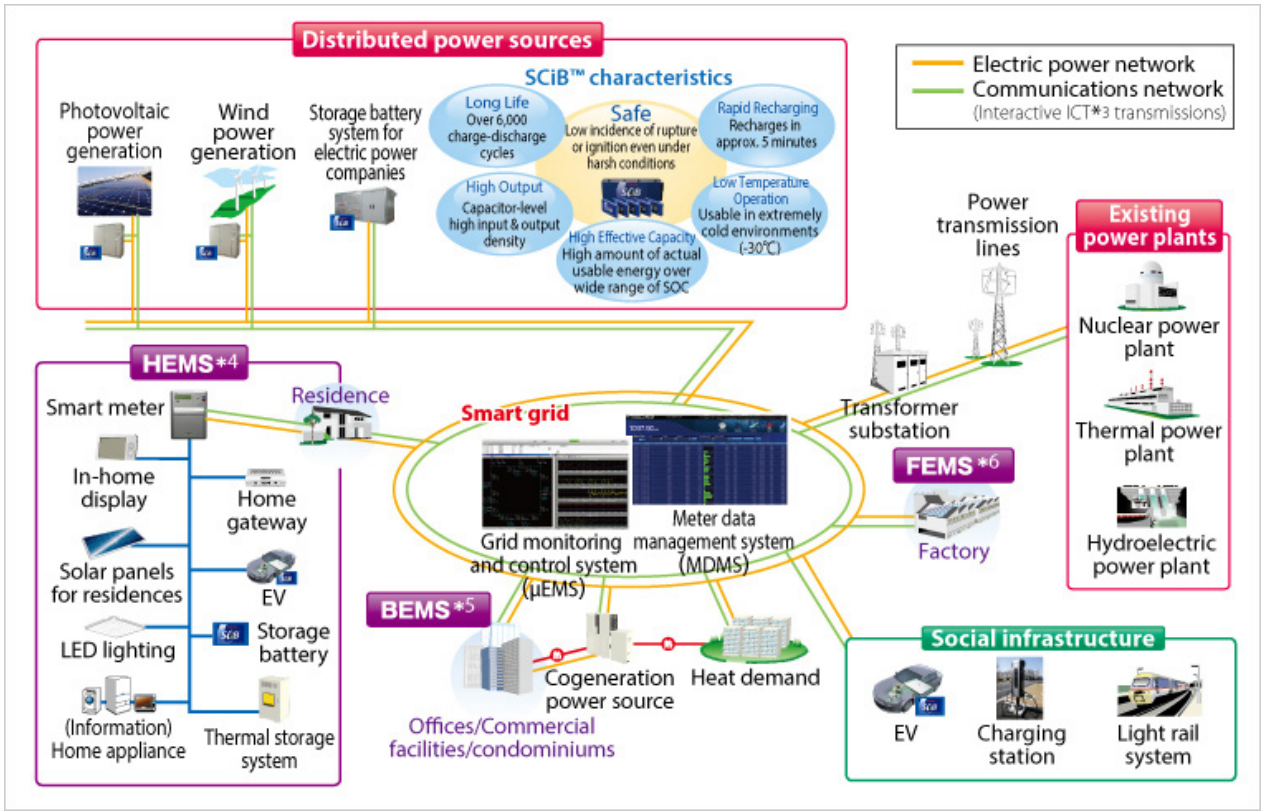
In Yokohama, in order to optimize local electricity supply and demand, Toshiba is conducting verification tests for a system that contributes to maintaining balance between supply and demand by controlling storage batteries within a community in a unified manner. A new initiative for maintaining the balance between electricity supply and demand using storage batteries distributed to residences and other consumers is underway.

## Smart meter

A smart meter is a high-performance system that collects data on power consumption and transmits the data to power utilities. It is able to collect detailed data on power consumption in buildings and houses and transmit such data to power utilities via the network. Users can also obtain information on their power consumption charges in real time. Smart meters are capable of two-way communication. When receiving an order from the grid monitoring system to reduce power demand (demand response system), the smart meter manages the power consumption of the connected appliances for which consumption is to be reduced.

Toshiba won an order from Tokyo Electric Power Company for a communication system for smart meters; in April 2014, installation and operation of the smart meter system built using Landis+Gyr AG's international standard communication technologies, which have a proven track record, began. Toshiba has also acquired the US-based Consert Inc., a company with demand response-related technologies, with a view to accelerating the speed of construction and overseas development of infrastructure for smart grid systems, including DR solutions.

**Smart grids, next-generation power distribution networks**

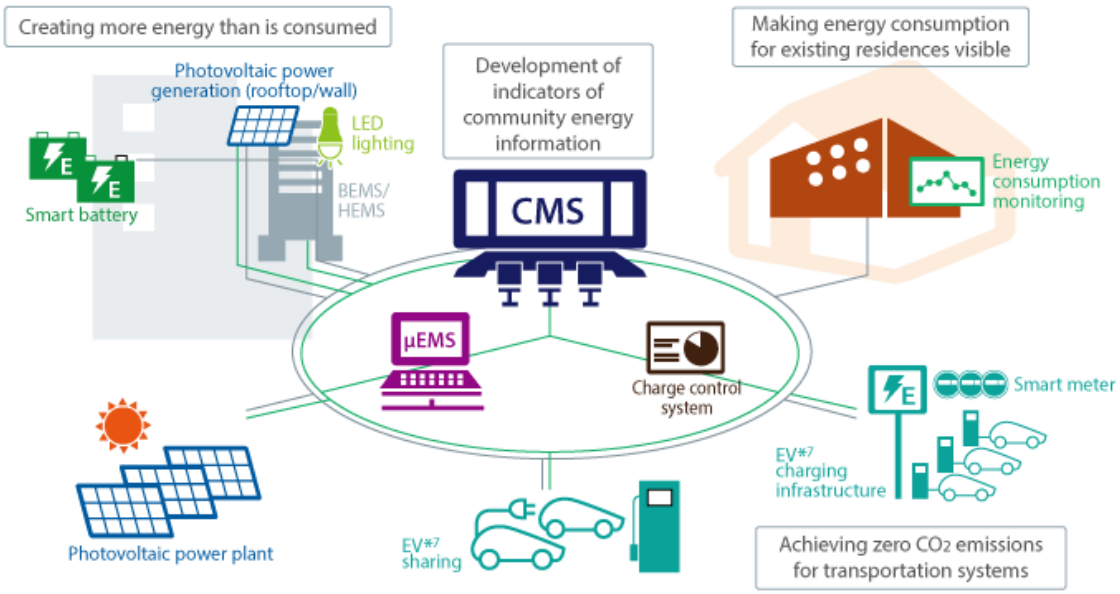


**Initiative for smart communities to realize a sustainable society**

## Verification of the Smart Community Project in Lyon, France

In the redevelopment area in Lyon, one of France's major cities, Toshiba Group is working to build a new system for buildings, the center of civic life, and transportation systems by combining Japan's outstanding energy technologies and information and communications technologies (ICT) in order to maximize use of renewable energy (e.g., photovoltaic power generation) and realize a low-carbon society with citizens' participation.
Verification of part of the new system began in October 2013; based on the knowledge we will gain from the test, we will classify issues to be addressed in realizing smart communities into those shared by all communities and those which vary from one community to another. We shall strive to achieve both comfort for individuals and sustainability for the entire community.

**Overview of the Smart Community Project in Lyon**




- For complex buildings consisting mainly of new offices and residences, we will introduce a building energy management system (BEMS*5) and home energy management system (HEMS*4), both of which control energy equipment (e.g., photovoltaic power generation equipment, storage batteries (smart batteries), and LED lighting) in an integrated manner in order to construct positive energy buildings (PEB), which create more energy than they consume.
- With respect to electricity, gas, water, and other utilities, we will establish a system to make energy consumption for existing residences visible.
- We aim to achieve zero $CO_2$ emissions for transportation systems by using photovoltaic power generation as a major source of energy for electric vehicles (EVs), which are offered as part of the car sharing system.
- We will collect real-time data on energy consumption (as mentioned above) in the community, develop indicators for local energy information, and provide administrative agencies and local residents with various kinds of information on energy.

By introducing and establishing these technologies and systems, we will verify that a 20% reduction in $CO_2$ emissions and a 20% increase in the amount of renewable energy compared to the current level are achievable in a sustainable environment in 2016.

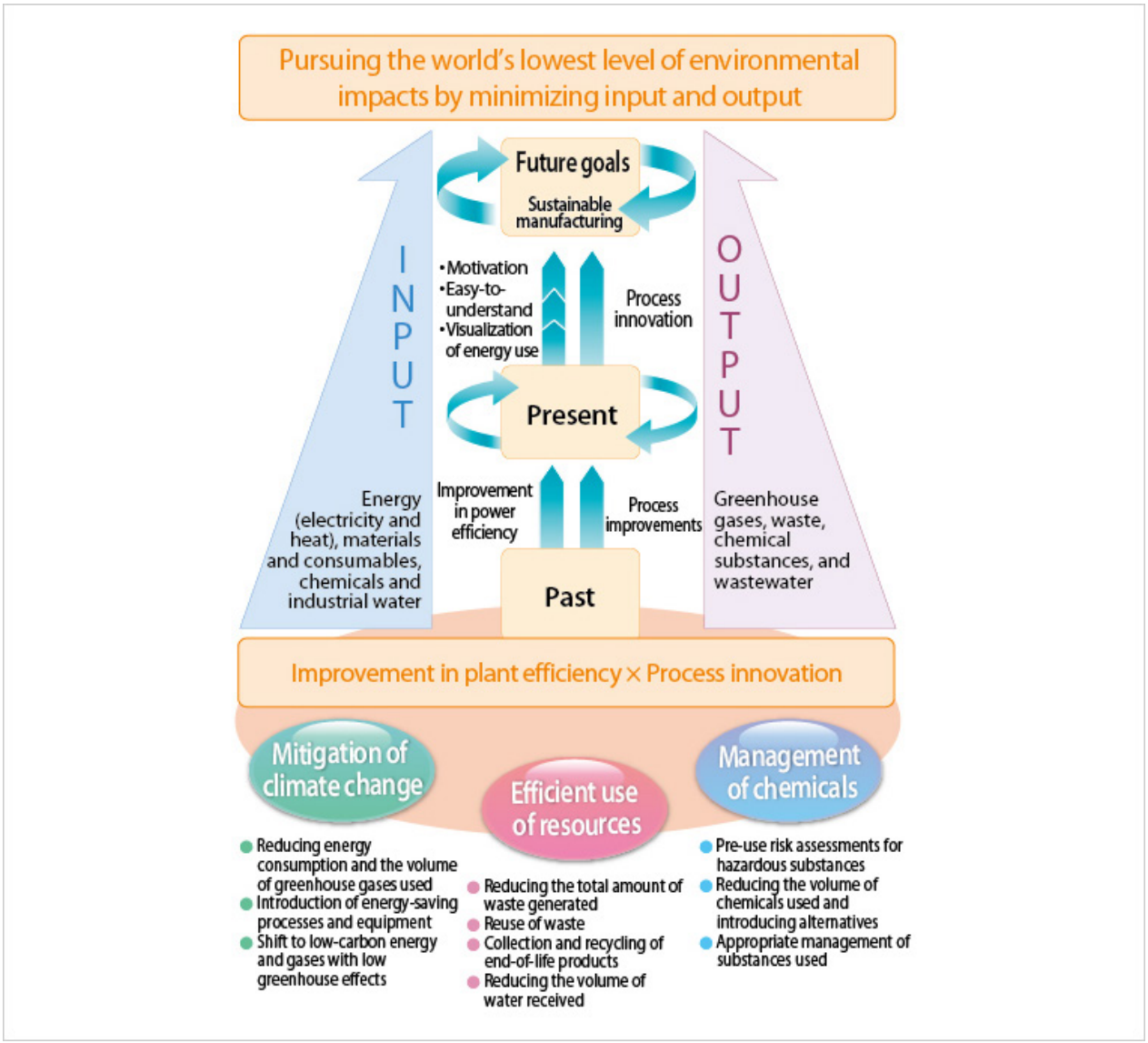
This project has been commissioned by the New Energy and Industrial Technology Development Organization (NEDO) in Japan.

*1 DR: Demand Response
*2 μEMS: Micro Energy Management System
*3 ICT: Information and Communication Technology
*4 HEMS: Home Energy Management System
*5 BEMS: Building Energy Management System
*6 FEMS: Factory Energy Management System
*7 EV: Electron Volt


## Pursuing the world's lowest level of environmental impacts

Toshiba Group is promoting Greening of Process, an initiative for high-efficiency manufacturing, which aims to minimize resource inputs in production processes in Japan and abroad, eliminate waste in manufacturing processes, and reduce to a minimum emissions into the atmosphere and waters, thus achieving the world's lowest level of environmental impacts. Specifically, this initiative consists of two efforts: “improvement of plant efficiency,” which refers to efforts to grasp energy consumption appropriately in order to ensure effective improvement of equipment operation and introduce high-efficiency equipment, and “process innovation,” which aims to achieve sustainable manufacturing in collaboration with all units involved in manufacturing.

**High-efficiency manufacturing**




Toshiba Group is promoting the Greening of Process initiative from three perspectives: mitigation of climate change, effective use of resources, and management of chemical substances. In terms of mitigation of climate change, Toshiba Group is actively taking energy conservation measures on a company-wide scale. We will grasp energy consumption in real time (visualization), analyze data (easy-to-understand), and take actions for improvement (motivation). In terms of effective use of resources, we will continue

to make maximum use of our ingenuity to reduce the total volume of waste generated and final waste disposal volumes as well as strive to use valuable water resources effectively. As for management of chemicals, the Group will make efforts to reduce the amount of targeted substances handled and discharged mainly through the introduction of alternative substances and process improvements. In the future, we will endeavor to achieve the world's lowest level of environmental impacts by realizing high-efficiency manufacturing that enhances our business competitiveness.

## Increasing business process eco-efficiency to 1.5 times the FY2000 level in FY2015

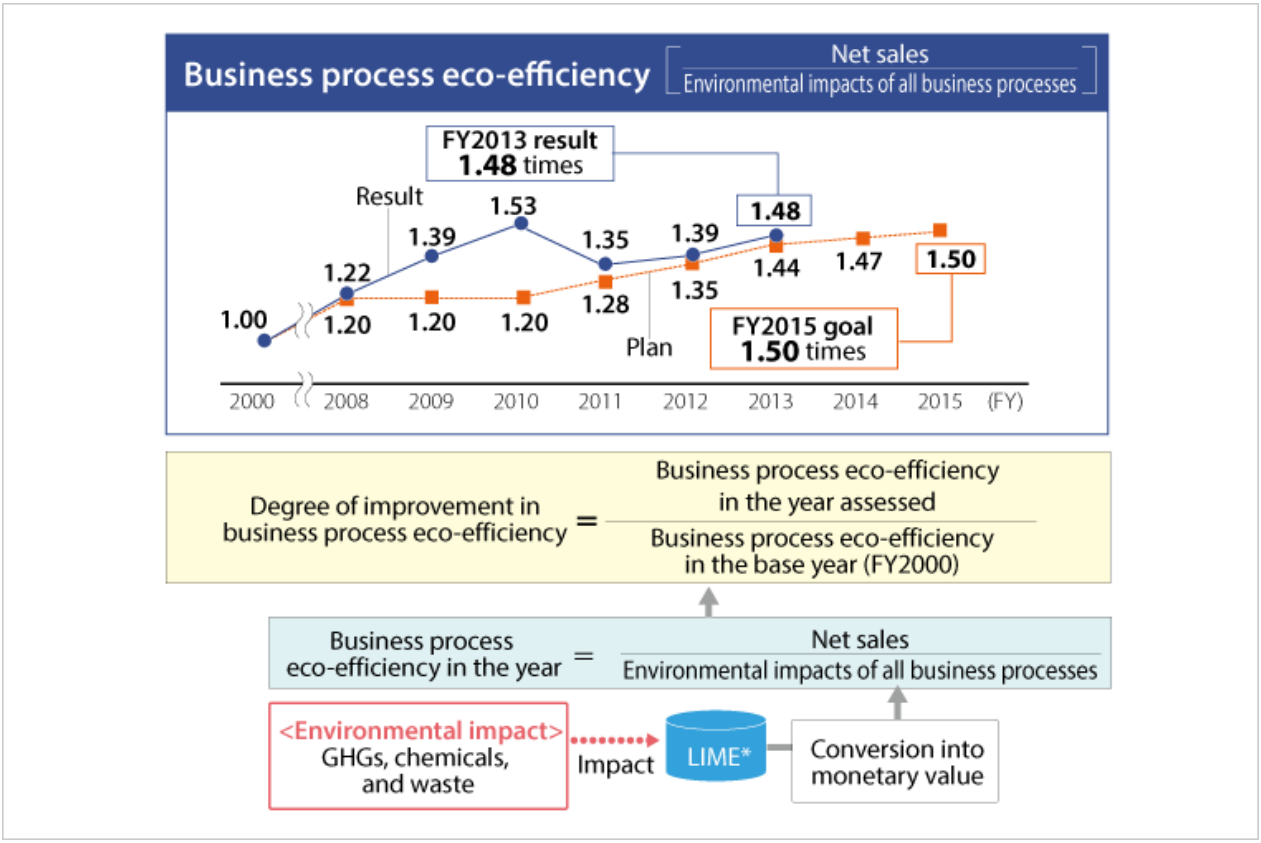
Toshiba Group, which comprehensively assesses the effects of environmental impacts in its business operations, views business process eco-efficiency as an important indicator of high-efficiency manufacturing and is working to reduce environmental impacts in manufacturing processes.

### Results of FY2013

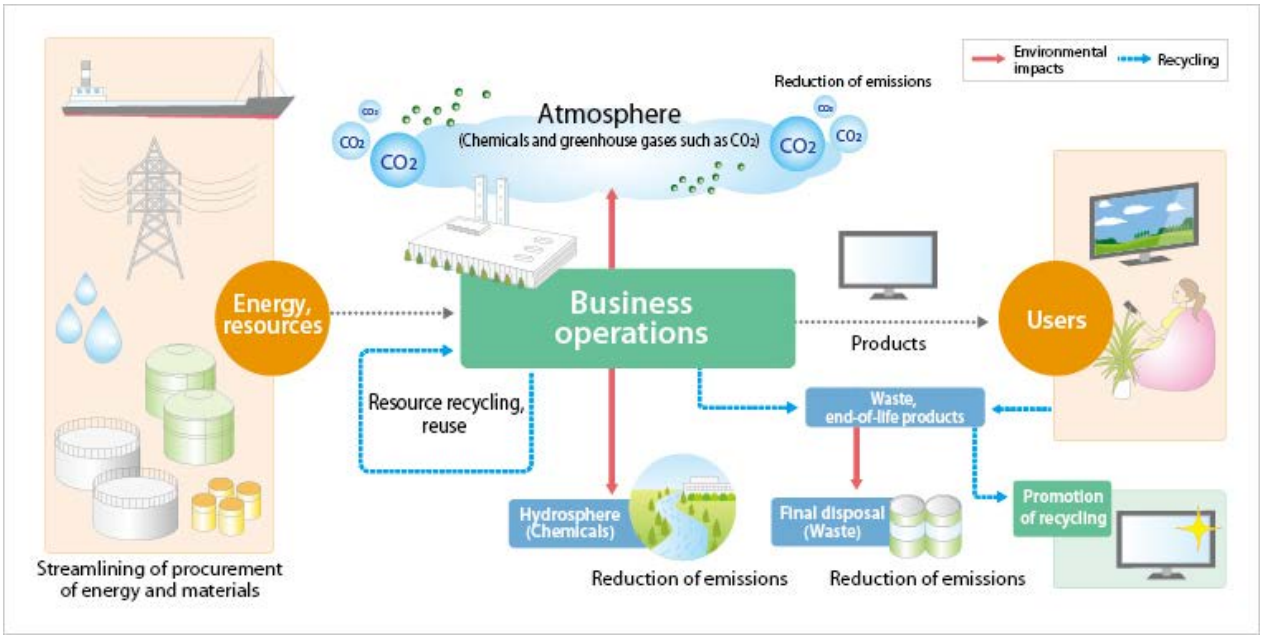
Sales decreased in FY2013 compared to the previous year. However, due to reductions in GHG emissions through energy conservation efforts and other factors, business process eco-efficiency improved compared to the previous year to 1.48 times (in comparison with the FY2000 level), exceeding the goal of 1.44 times.

### Future initiatives

The goal of the Fifth Environmental Action Plan is to increase business process eco-efficiency to 1.5 times compared to the FY2000 level in FY2015. To achieve this goal, Toshiba Group will work to reduce environmental impacts according to the nine specific targets.




* LIME : One of the leading environmental assessment methods in Japan, LIME (Life-cycle Impact assessment Method based on Endpoint modeling) was developed by the National Institute of Advanced Industrial Science and Technology, an independent administrative institution.


Environmental impacts
Recycling
Reduction of emissions
Atmosphere
(Chemicals and greenhouse gases such as CO2)
CO2
Energy, resources
Business operations
Products
Users
Resource recycling, reuse
Waste, end-of-life products
Hydrosphere (Chemicals)
Final disposal (Waste)
Promotion of recycling
Streamlining of procurement of energy and materials
Reduction of emissions
Reduction of emissions

# Reducing total GHG emissions

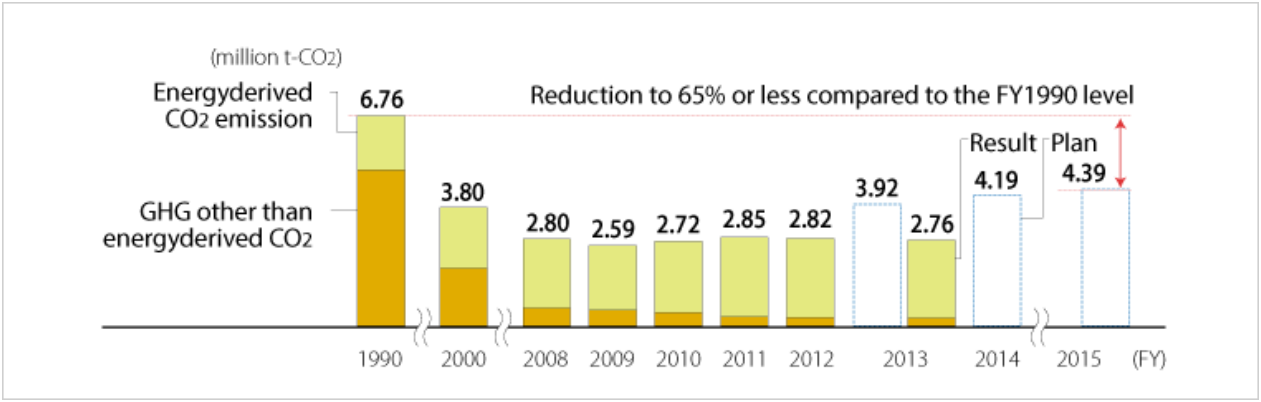
Toshiba Group proactively installed systems to collect and/or remove sulfur hexafluoride ($SF_6$), which is used to insulate heavy electric machinery, and perfluorocarbons (PFCs), which are used to produce semiconductors. As a result, in FY2000, the Group nearly halved the total amount of GHG emitted* compared to the FY1990 level, and in subsequent years, GHG emissions continued to decrease as the Group steadily took measures to improve its production processes. Meanwhile, energy-derived $CO_2$ emissions resulting from the use of electricity, which peaked in FY2007, when production reached its highest level, have been reduced since FY2008 by taking energy conservation measures at all business and production sites, including ones overseas, restructuring production sites, and introducing renewable energy proactively.

* Six types of greenhouse gases targeted for reduction in the Kyoto Protocol: carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride ($SF_6$)

## Results of FY2013 and future initiatives

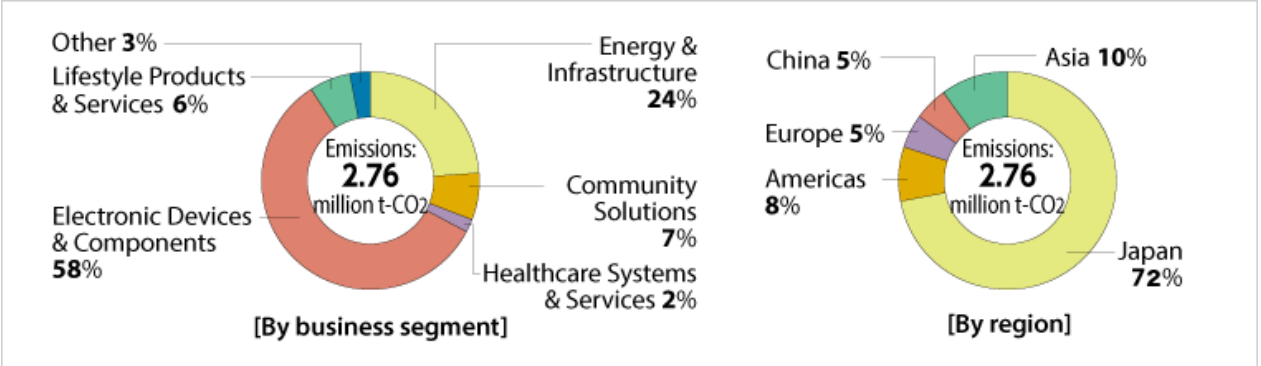
In FY2013, Toshiba Group reduced GHG emissions other than energy-derived $CO_2$ to less than 5% of the FY1990 level mainly by installing PFC removal equipment. Meanwhile, energy-derived $CO_2$ emissions were affected by the deterioration of the $CO_2$ emission coefficient for electricity due to the effects of the Great East Japan Earthquake, but the Group reduced power consumption compared to the FY2010 level by taking proactive power conservation measures, including capital investments. Energy-derived $CO_2$ emissions would have fallen compared to the previous year if assessed using the same $CO_2$ emission coefficient for electricity. The $CO_2$ emission coefficient for electricity is expected to further deteriorate in the future, but Toshiba Group will continue to make steady efforts to reduce total GHG emissions by investing proactively in high-efficiency equipment. The Group's goal is to reduce total GHG emissions to 4.39 million tons or less (65% compared to the FY1990 level) in FY2015.

**Changes in total GHG emissions**




* The $CO_2$ emissions coefficient for electricity is used to calculate energy-derived $CO_2$ emissions (in Japan, 3.50 t-$CO_2$/10,000 kWh in FY2010, 4.76 t-$CO_2$/10,000 kWh in FY2011, and 4.87 t-$CO_2$/10,000 kWh in FY2012 and 2013). Overseas electricity is based on the GHG Protocol.

**Breakdown of GHG emissions (FY2013)**



# Reducing energy-derived $CO_2$ emissions

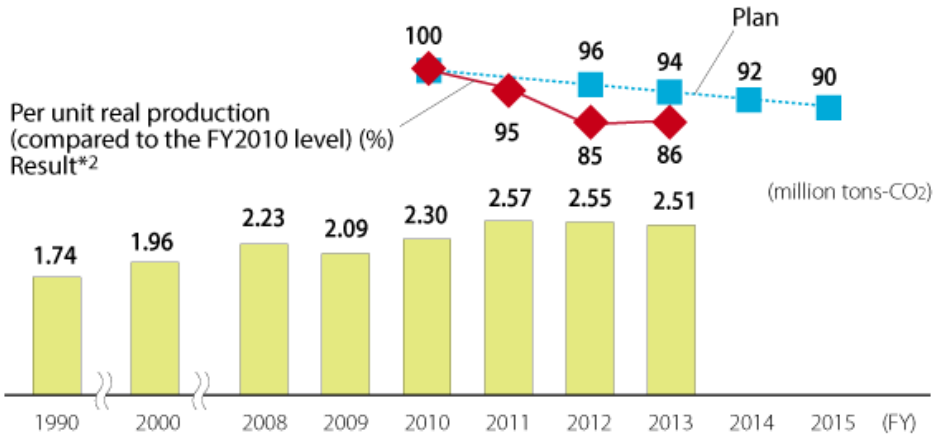
## Results of FY2013

Under the Fifth Environmental Action Plan, in order to assess $CO_2$ emissions measures consisting mainly of those for electricity conservation, the Group uses energy-derived $CO_2$ emissions per unit production by fixing the $CO_2$ emission coefficient to FY2000. The amount of $CO_2$ actually emitted in FY2013 was 2.51 million tons (an increase of 210,000 tons compared to the FY2010 level), a substantial increase which was greatly affected by the deterioration of the $CO_2$ emission coefficient for electricity due to the March 11, 2011 earthquake; however, as a result of initiatives to reduce power consumption mainly through energy-saving investments, proactive electricity conservation, and production adjustments, Toshiba Group was able to reduce energy-related $CO_2$ emissions per unit production to 86% of the FY2010 level, eight percentage points higher than the initial goal.

## Future initiatives

In order to meet growing market demand, Toshiba Group plans to construct new plants, mainly those for manufacturing semiconductors. Therefore, energy-derived $CO_2$ emissions are likely to increase in the near future. The Group will continue its efforts to reduce $CO_2$ emissions per unit production by 10% compared to the FY2010 level in FY2015 by adopting a variety of energy conservation measures, including performing energy-saving diagnoses and investing in energy-saving facilities.

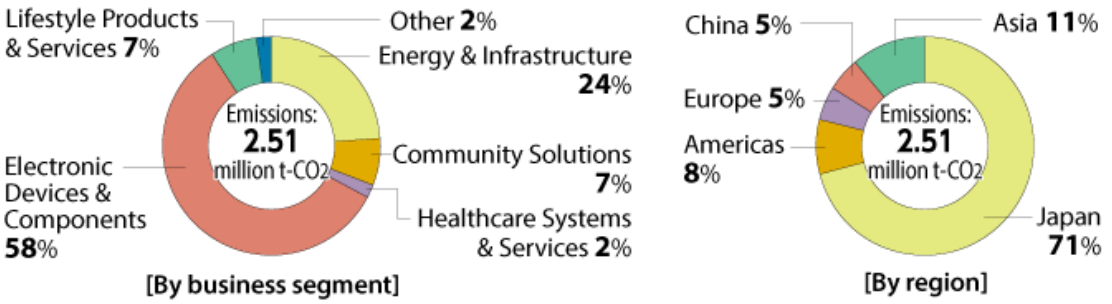
**Changes in energy-derived $CO_2$ emissions per unit production**




* The $CO_2$ emissions coefficient for electricity is used to calculate energy-derived $CO_2$ emissions (in Japan, 3.50 t-$CO_2$/10,000 kWh in FY2010, 4.76 t-$CO_2$/10,000 kWh in FY2011, and 4.87 t-$CO_2$/10,000 kWh in FY2012 and FY2013). Overseas electricity is based on the GHG Protocol.

*2 The electricity coefficient in Japan is fixed to that of FY2010.

**Breakdown of energy-derived $CO_2$ emissions (FY2013)**



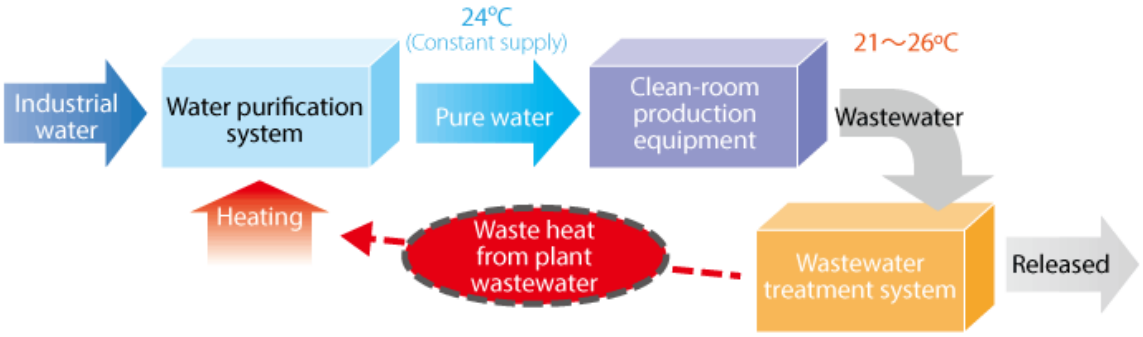
## Case Study: Recovery of waste heat from plant wastewater

**Iwate Toshiba Electronics Co., Ltd.**

Partly because it is located in a cold district, Iwate Toshiba Electronics Co., Ltd. is working to recover various kinds of waste heat because the plant requires more heat, particularly in winter.

As part of measures to further recover waste heat, the company noted the fact that plant wastewater during treatment, which has a temperature of 21°C or more throughout the year, became a greater thermal source than outside air in winter, so the company worked to recover waste heat by taking advantage of this difference.

Since there was the possibility that particulates in plant wastewater might stick to the heat exchanger, workers made effective use of the heat exchanger by applying ingenious schemes. Thus, the company was able to reduce $CO_2$ emissions by 505 tons annually.

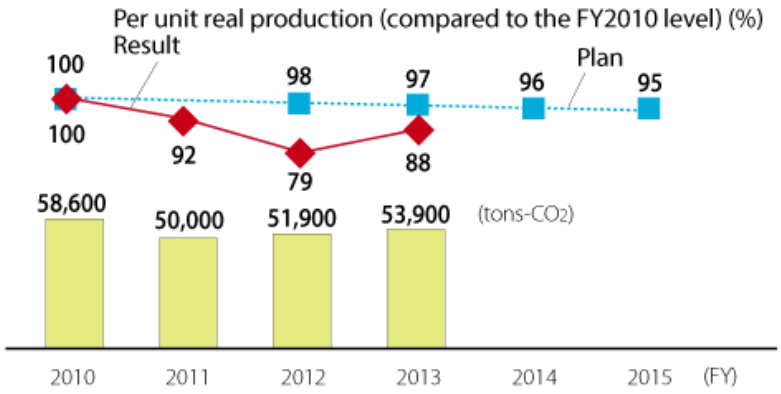


# Reducing $CO_2$ emissions associated with product logistics

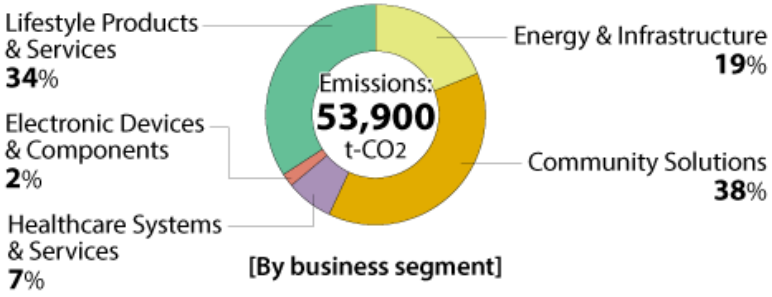
## Results of FY2013 and future initiatives

In FY2013, Toshiba Group strove to reduce energy consumption during product logistics by taking various measures, including improving load factors when transporting products, applying modal shifts to a wider range of products, and shortening the transport distance by restructuring distribution centers. $CO_2$ emissions associated with product logistics increased compared to the FY2012 level due to a last-minute jump in demand before an increase in the consumption tax rate, but the Group reduced $CO_2$ emissions per unit production by 12% compared to the FY2010 level, exceeding the initial target for FY2013 by 9%. In the future, Toshiba Group will continue its efforts to reduce $CO_2$ emissions associated with product logistics with a view to reducing $CO_2$ emissions per unit production by 5% compared to the FY2010 level in FY2015.

**Changes in $CO_2$ emissions per unit production associated with product logistics in Japan**




**Breakdown of $CO_2$ emissions associated with product logistics in Japan in FY2013**




**$CO_2$ emissions associated with overseas and international logistics (approximate figures)**

Toshiba Group works to collect data on overseas and international logistics for the group and calculates approximate $CO_2$ emissions associated with such logistics for improvement.

**Total: 502,000 t-$CO_2$**

(Breakdown)
International logistics: 424,000 t-$CO_2$
Logistics in overseas countries: 23,000 t-$CO_2$
Logistics in Japan: 54,000 t-$CO_2$

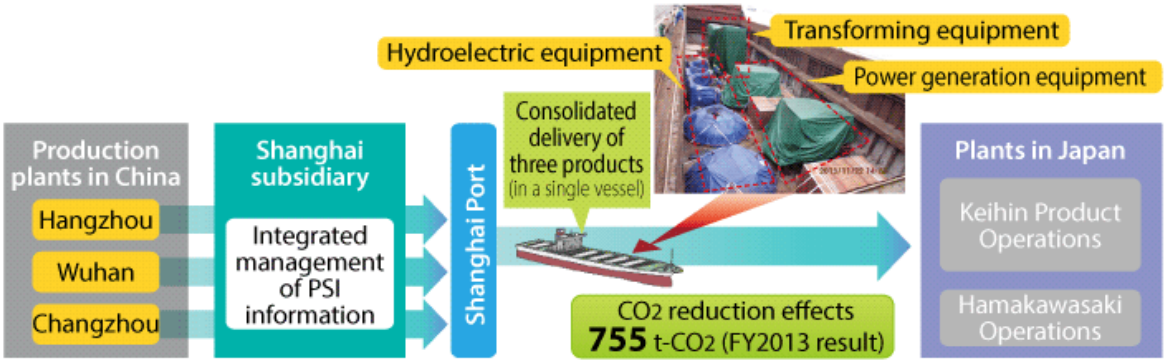
## Case Study: Initiatives for consolidated delivery by ship (heavy items)

**Toshiba Logistics Corp.**

Previously, Toshiba Logistics Corp. transported heavy products (e.g., hydroelectric equipment) produced at three factories in China (Hangzhou, Wuhan, and Changzhou) from Shanghai Port using three separate freight vessels.

Toshiba's subsidiary in Shanghai realized consolidated delivery using a single freight vessel by managing PSI information* for Chinese factories and those in Japan in an integrated manner.

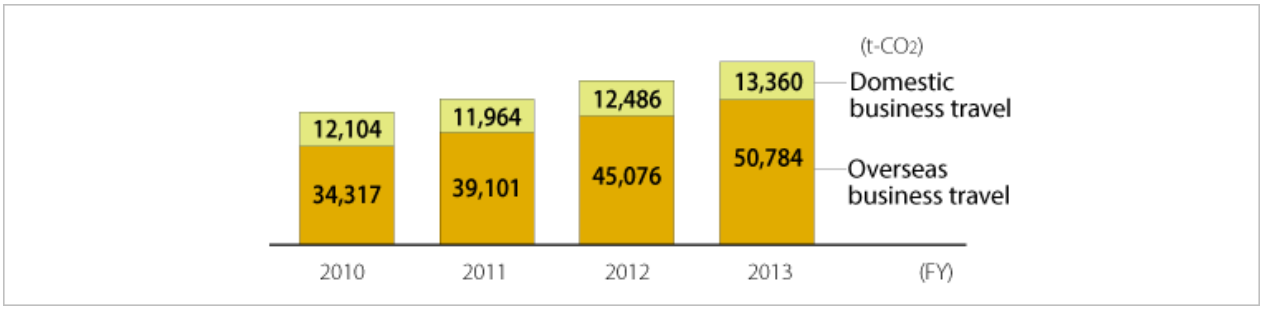
* PSI information: Information on Production, Sales, and Inventories



## Reductions in $CO_2$ emissions from employees' business travel

Toshiba Group is working to analyze $CO_2$ emissions resulting from employees' business travel. The graph below indicates $CO_2$ emissions from employees' business travel by air from FY2010 to FY2013. In FY2013, $CO_2$ emissions increased due to a larger number of employees traveling on business trips mainly to launch new businesses.

**Changes in $CO_2$ emissions from employees' business travel**




* $CO_2$ emissions per unit passenger transport × Distance of travel × Seat class coefficient (overseas business travel only) (from the Japanese Ministry of the Environment's guidelines)

## Use of renewable energy

Toshiba Group is continuously striving to use renewable energy for a wider range of its operations. In FY2013, the Group used about 10,991 MWh's worth of renewable energy. This means that the Group reduced $CO_2$ emissions by about 5,353 tons*. Toshiba Corp. has also used a green power system since January 2005 and has since been purchasing 2,000 MWh of electricity under a green power certificate annually.

* Calculated based on 4.87 t-$CO_2$/10,000 kWh

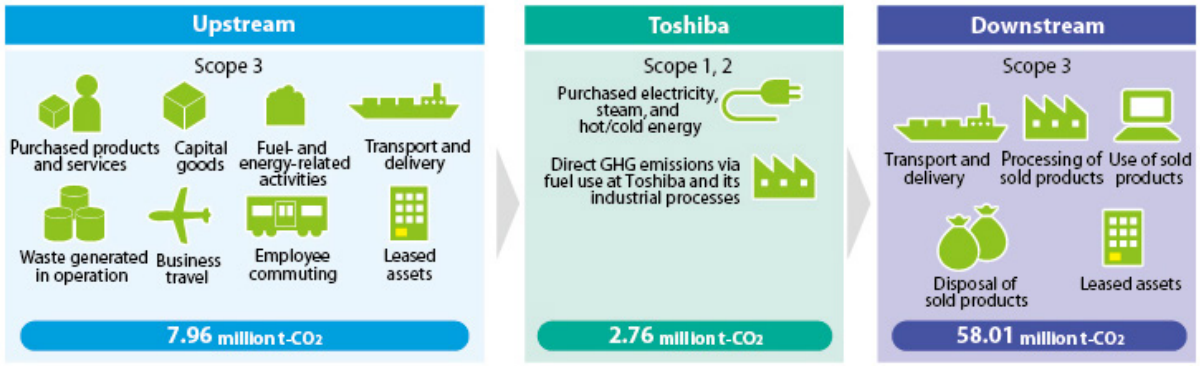
## Making GHG emissions in the supply chain visible for all categories

Toshiba Group is working to calculate and analyze GHG*1 emissions throughout its entire supply chain. Also, the Group calculates such emissions for all categories using the calculation methods based on the Ministry of the Environment's guidelines*2 and compares the results to those for the previous year for each category. In 2013, the Group reduced GHG emissions during product use (the life cycle stage having the largest amount of emissions) by about 9% compared to the previous year.

Toshiba Group believes that it is important to work effectively to reduce GHG emissions throughout the product life cycle by quantitatively analyzing emissions per category as described above.

*1 $CO_2$, $CH_4$, $N_2O$, HFCs, PFCs, and $SF_6$

*2 Basic guidelines for calculating GHG emissions throughout the supply chain



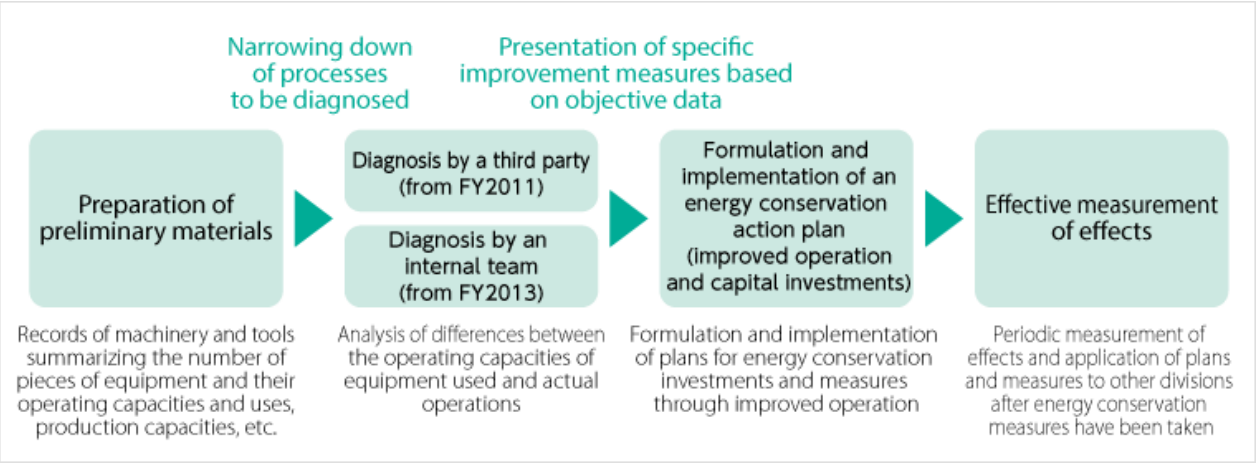

| Category | | Categories covered by calculations | FY2012 calculation results (million t-$CO_2$) | FY2013 calculation results (million t-$CO_2$) | Changes in emissions | Considerations |
|---|---|---|---|---|---|---|
| Upstream | 1 | Purchased goods and services | 6.58 | 7.00 | 6% | GHG emissions increased due to growth in purchased capital goods. |
| | 2 | Capital goods | 0.57 | 0.78 | -13% | As a result of screening investments, GHG emissions were reduced. |
| | | | | | 51% | GHG emissions increased due to investments in the semiconductor business. |
| | 3 | Fuel- and energy-related activities (not included in Scope 1 or Scope 2) | 0.16 | 0.16 | -1% | GHG emissions decreased mainly because of energy conservation efforts. |
| | 4 | Upstream transportation and distribution | 0.52 | 0.50 | -3% | GHG emissions reduced due to modal shifts as well as lighter and smaller products. |
| | 5 | Waste generated in operation | 0.03 | 0.03 | -20% | GHG emissions decreased due to reductions in waste volume. |
| | 6 | Business travel | 0.06 | 0.07 | 11% | GHG emissions increased mainly due to business travel for business expansion. |
| | 7 | Employee commuting | — | — | | GHG emissions for this category were estimated at 0.1% of the total or less. |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 8 | Upstream leased assets | — | — | | This category is not relevant, because the type of industry category of Toshiba is manufacturing |
| Toshiba | 9 | Direct GHG emissions (Scope 1) | 0.81 | 0.78 | -2% | GHG emissions decreased mainly due to energy conservation efforts. |
| | 10 | Indirect emissions associated with energy-derived emissions (Scope 2) | 2.02 | 1.98 | -3% | GHG emissions decreased mainly due to energy conservation efforts. |
| Downstream | 11 | Downstream transportation and distribution | 0.15 | 0.14 | -5% | GHG emissions decreased due to smaller and lighter products. |
| | 12 | Processing of sold products | — | — | — | This category mainly covers finished products and parts that do not require processing. |
| | 13 | Use of sold products | 58.28 | 52.95 | -9% | GHG emissions decreased mainly because of energy conservation efforts related to TV and air conditioning systems. |
| | 14 | End-of-life treatment of sold products | ▲0.36 | ▲0.36 | 1% | The volume of products recycled decreased because they became smaller and lighter. |
| | 15 | Leased assets (Downstream) | — | — | | This category is not relevant, because the type of industry category of Toshiba is manufacturing |
| | 16 | Franchises | — | — | | This category is not relevant, because the type of industry category of Toshiba is manufacturing |
| | 17 | Investments | — | — | | This category is not relevant, because the type of industry category of Toshiba is manufacturing |
| Total | | | 68.81 | 64.03 | | |

# Accelerating the implementation of energy conservation measures through energy-saving diagnosis

Toshiba Group is working with a third party to perform energy conservation diagnoses at its production sites. By working with a third party, the Group aims to clarify from the viewpoint of energy conservation whether there are any elements of waste in production equipment or its operation that have gone unnoticed by internal diagnoses as well as to identify specific improvement measures (including examining the cost effectiveness thereof), thus stepping up efforts to take energy conservation measures at production sites. In addition, starting in FY2013, the Group formed an internal diagnosis team and conducted energy conservation diagnoses at its Chinese bases. In the future, we will expand this initiative to cover Southeast Asia and accelerate efforts to globally establish stronger manufacturing systems with fewer environmental impacts.

**Example energy conservation diagnosis scheme**




## Examples of implementations by third parties

### Toshiba Hydro Power (Hangzhou) Co., Ltd.

Toshiba Hydro Power (Hangzhou) Co., Ltd. is one of Toshiba's bases in China that emits a large amount of $CO_2$. The company had already taken energy conservation measures such as cutting off power for power receiving transformers at the time of no load; however, in order to further step up its energy conservation efforts, the company conducted energy conservation diagnoses. From among the potential reductions determined from the results of these diagnoses, it chose to implement energy conservation programs such as reinforcing equipment to recover waste heat from the annealing furnace and using inverters to control the amount of exhaust from arc-induced fans.


Confirmation of appropriate operation management

### Toshiba TEC Information Systems (Shenzhen) Co., Ltd.

Like Toshiba Hydro Power (Hangzhou) Co., Ltd., Toshiba TEC Information Systems (Shenzhen) Co., Ltd. is one of Toshiba's bases in China that emits a large amount of $CO_2$; the company has been committed totally to promote energy conservation efforts. After conducting energy conservation diagnoses, it carried out energy conservation programs for air conditioning systems, transformers, factory lighting, and other devices that significantly impacted energy conservation.

Expected to reduce $CO_2$ emissions by 260 tons annually

Confirmation of manufacturing processes

## Example of implementation by an internal energy conservation diagnosis team

### Toshiba Information Equipment (Hangzhou) Co., Ltd.

In addition to voluntary energy conservation activities, Toshiba Information Equipment (Hangzhou) Co., Ltd. is stepping up its energy conservation efforts by having all its equipment undergo energy conservation diagnoses by an internal team. As a result of these diagnoses, the company has identified potential reductions such as consolidation of transformers and improved operation of lighting apparatuses as well as improvement of compressed air pipe systems, supply of low-voltage current by transformers, and use of LED lighting.

Expected to reduce $CO_2$ emissions by 143 tons annually

Confirmation of power supply equipment

# Reducing the total waste volume

Toshiba Group is working to reduce waste generation by minimizing the volume of waste generated per unit production, which indicates business process efficiency improvement, as well as by reducing the total volume of waste to a level below the Earth's environmental capacity.

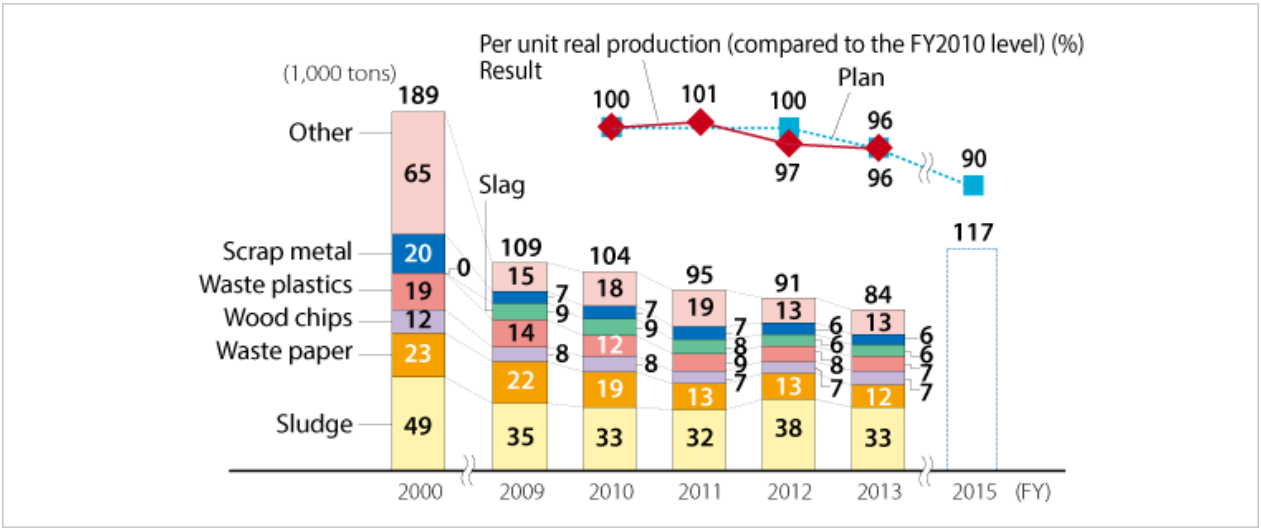
## Results of FY2013

In FY2013, the total volume of waste generated per unit production was 96% compared to that of FY2010, exceeding the initial target. The volume of waste (excluding that of objects with value) totaled 84 thousand tons, which is 28 thousand tons lower than the initial target.

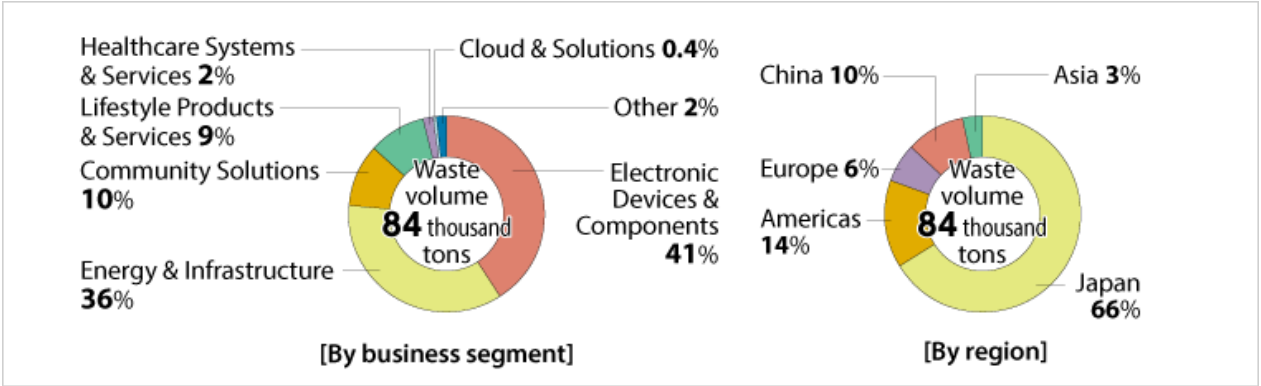
## Future initiatives

In the Fifth Environmental Action Plan, Toshiba Group aims to reduce the volume of waste per unit production in FY2015 by 10% compared to FY2010 and to reduce the total volume of waste to 117 thousand tons. The Group will step up its efforts at each production site by launching a new program, “3R diagnosis.”

**Waste volume and total volume of waste generated per unit production**




**Breakdown of the total volume of waste generated (FY2013)**



## Reducing the final disposal volume

In order to create a sound material-cycle, sustainable society, Toshiba Group is working to achieve zero waste emission— an initiative of reducing final landfills to zero by promoting the reuse and recycling of waste.

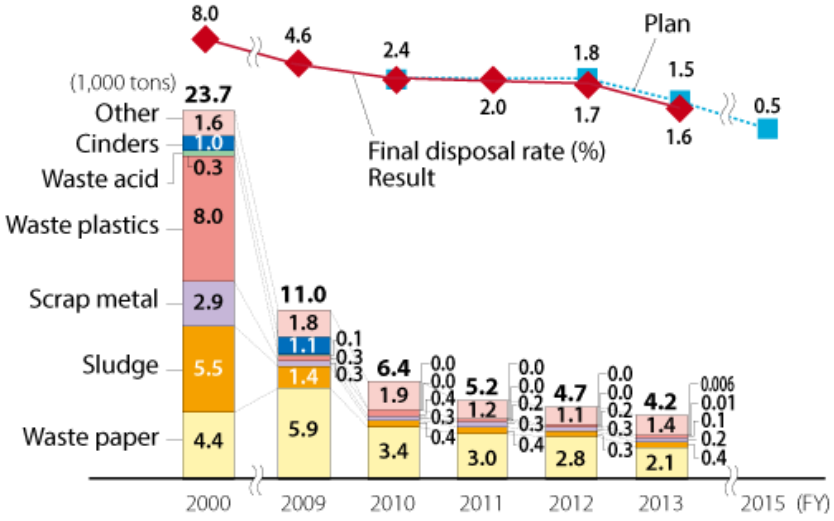
### Results of FY2013

The percentage of final landfills to the total volume of waste generated by Toshiba Group in FY2013 was 1.6%, falling short of the initial target of 1.5%, though an improvement of 0.1% compared to the previous year.

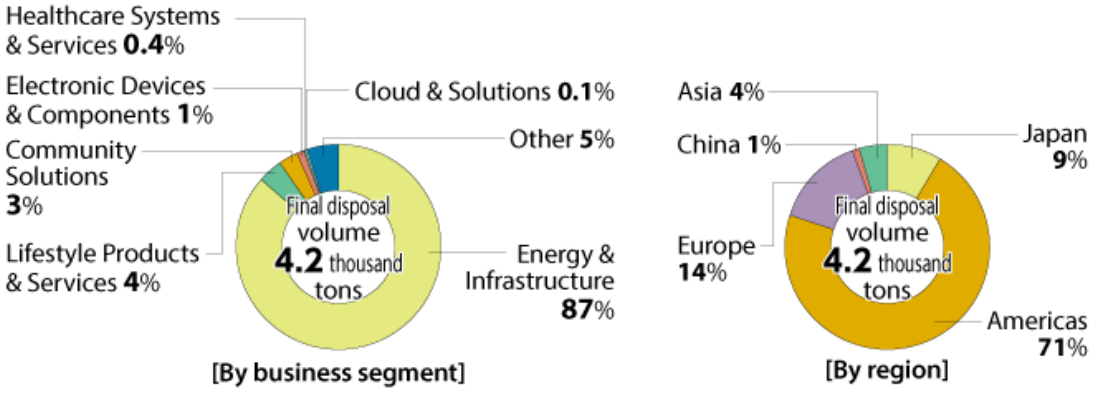
### Future initiatives

One goal of the Fifth Environmental Action Plan is to reduce the percentage of final landfills to 0.5% in FY2015. To this end, Toshiba Group will take recycling measures and accumulate recycling know-how at production sites in Japan as well as apply such know-how to overseas sites with high reduction potential.

**Final waste disposal volume and the final disposal rate**




**Breakdown of the final waste disposal volume (FY2013)**



### Case Study: Initiatives for waste reduction at overseas sites

**Westinghouse Electric Company**

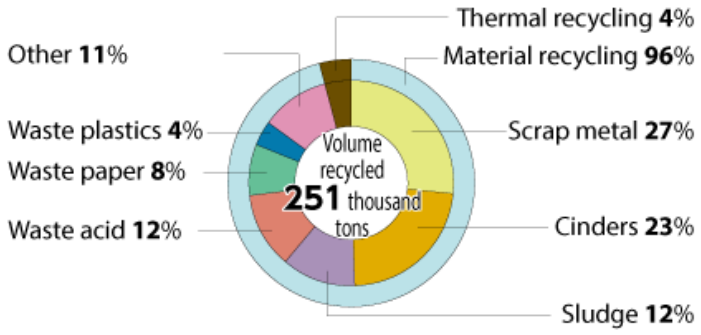
Westinghouse Electric Company held a waste audit event for members of various divisions to jointly confirm the content of waste from its business sites. This event led to reductions in waste such as paper towels and plastic containers. A video of the event was effectively used for employee training, bringing about results by changing employees' awareness about the need to use resources effectively. As a result of these initiatives, the company substantially reduced the volume of waste generated and final disposal volumes over the five years leading up to FY2013, lowering the former to half and the latter to one-fifth.


Employees discuss reducing and recycling waste at the waste audit event

## Promoting recycling

In FY2013, Toshiba Group recycled 251,000 tons of resources. 93% of the total volume of waste generated was reused effectively as various resources. The recycled resources consisted mainly of scrap metal and cinders, and 96% of them were used effectively for material recycling (recycled into materials for products), and the remaining 4% for thermal recycling (heat recovery). In the future, Toshiba Group will continue to increase the total volume of resources recycled and at the same time will strive for higher quality recycling chiefly by increasing the percentage of resources recycled into materials.

**Breakdown of the volume recycled (FY2013)**



# Efficient use of water resources

In response to a global increase in concerns regarding water problems, Toshiba Group is promoting sustainable water resource management. In particular, Toshiba Group is stepping up water management at business and production sites located in water stress areas where supply-demand relations in water resources are tight. At its new manufacturing base in India, the Group established a system for recycling plant wastewater and using rainwater; as a result, the new plant generates no wastewater through effective use of water resources. In recognition of the fact that securing water resources involves environmental impact even in countries with well-developed water supply infrastructure, we are working to reduce the amount of water received.

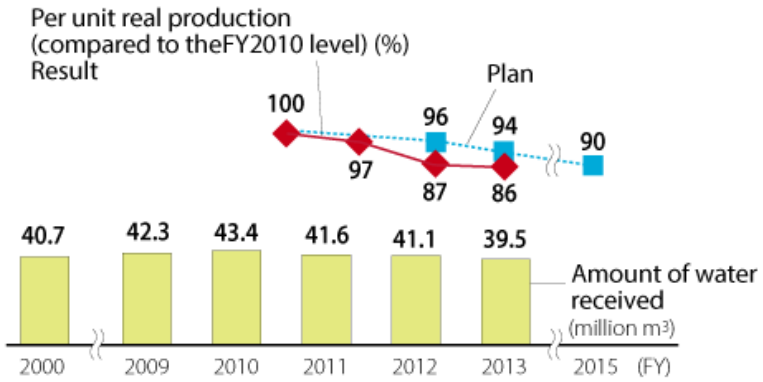
## Results of FY2013

The amount of water received per unit production in FY2013 was 86% of the total for FY2010, exceeding the initial target by eight percentage points. The total amount of water received was 39.54 million m³, about 1.6 million m³ less than in the previous year.

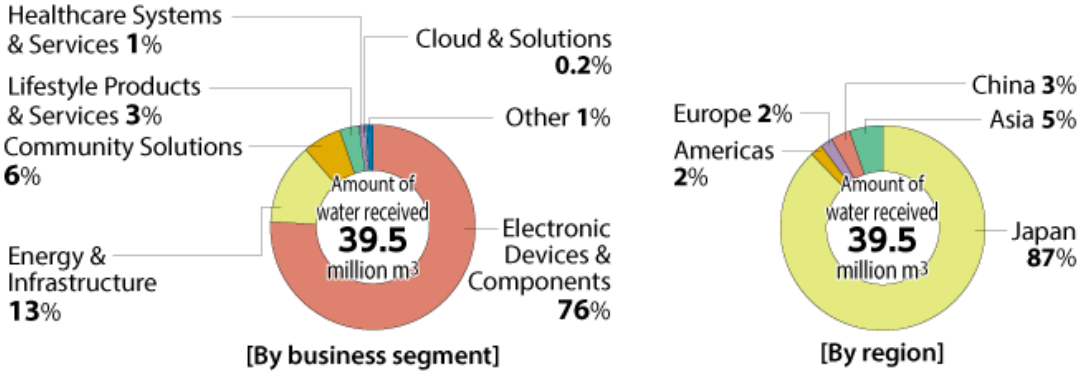
## Future initiatives

Under the Fifth Environmental Action Plan, Toshiba Group aims to reduce the amount of water received per unit real production by 10% compared to the FY2010 level in FY2015. We will continue to promote the reuse and recycling of water at domestic semiconductor plants, which account for 72% of the water received by Toshiba Group. Business and production sites located in countries where the amount of water resources per person is 1,700 m³ or less annually or in watersheds where over 60% of water is taken from rivers represent about 1% of the total amount of water received by the Group. We will step up our efforts to reduce the amount of water received by our business and production sites in such water stress areas.

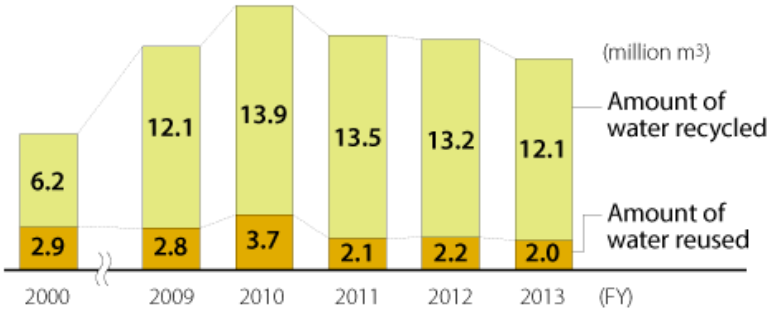
**Amount of water received and that per unit production**




**Breakdown of the amount of water received (FY2013)**



**Amount of water recycled (FY2013)**




## Case Study: Initiatives for protecting the water environment in Singapore

**Toshiba Asia Pacific Pte. Ltd. and others**

In Singapore, which imports most of its water supply due to limited water resources, increasing water self-sufficiency is an important national issue. At Singapore-based Toshiba Asia Pacific Pte. Ltd., employees attended a lecture on protecting the water environment. The lecture was planned jointly by the company and five local affiliated companies as part of its Global Environmental Action event; the lecture was given by Waterways Watch Society, an NPO, and was followed by a cleaning campaign targeting the Singapore and Kallang Rivers, both of which are major freshwater sources for the country. This event helped raise employees' environmental awareness by encouraging them to join forces to use water resources effectively.

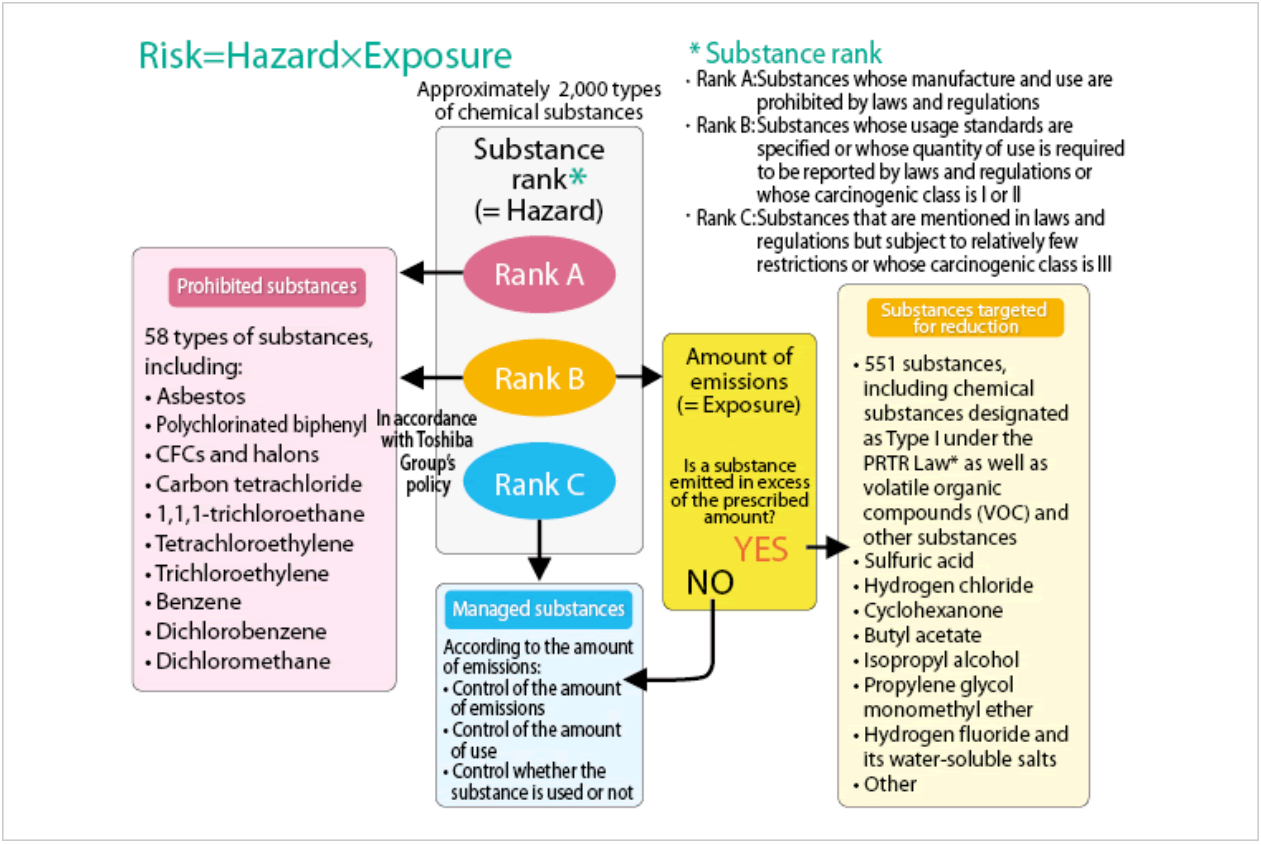
Participants in the Global Environmental Action event held by the Singaporean subsidiary

Cleaning of the Singapore and Kallang Rivers

# Managing chemical substances

Toshiba Group classifies standards for the handling of chemical substances into the three categories of prohibition, reduction, and control, and manages chemical substances according to the regulations for each category. The relationship between substance ranking and management classifications, which shows the concept underlying this initiative, is indicated in the figure below. Approximately 2,000 types of chemical substances are classified into three ranks (hazard level A, B, and C) based on the regulatory levels set by environmental legislation, data on carcinogenic chemicals, and other factors. The classifications of prohibition, reduction, and control are determined by judging risks for each chemical substance using the ranking of the substance equivalent to hazard levels and emissions equivalent to exposure to the substance.

**Substance ranking and management classifications**




* Law Concerning Pollutant Release and Transfer Register

# Reducing emissions of chemical substances

Toshiba Group strives to reduce the consumption of chemical substances by designating substances that have large direct impacts on the environment as those targeted for reduction. By business segment, electronic devices, power and social infrastructure systems, and community solutions account for over 90% of the total emissions of such substances, and by region, 70% of such emissions originate from Japan.

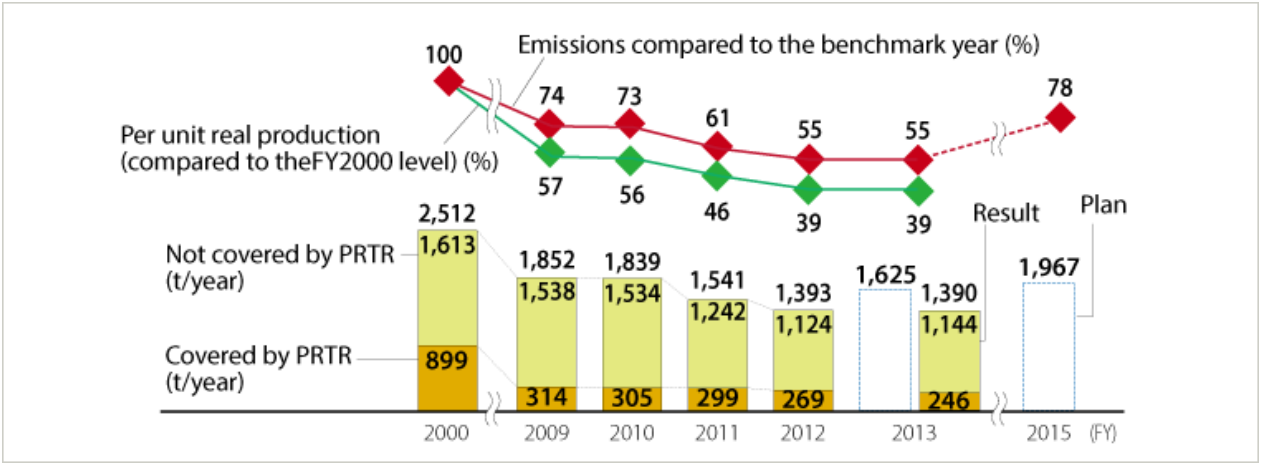
## Results of FY2013

In FY2013, Toshiba Group gave priority to taking measures for solvents used in cleaning and resist coating, which ranked high among such emissions, and promoted such initiatives as using alternative substances, starting operation of combustion detoxifying devices, and improving manufacturing processes in order to reduce the use of raw materials. As a result, the Group reduced emissions of substances targeted for reduction by three tons compared to the FY2012 level and by 1,122 tons (45%) compared to the FY2000 level.

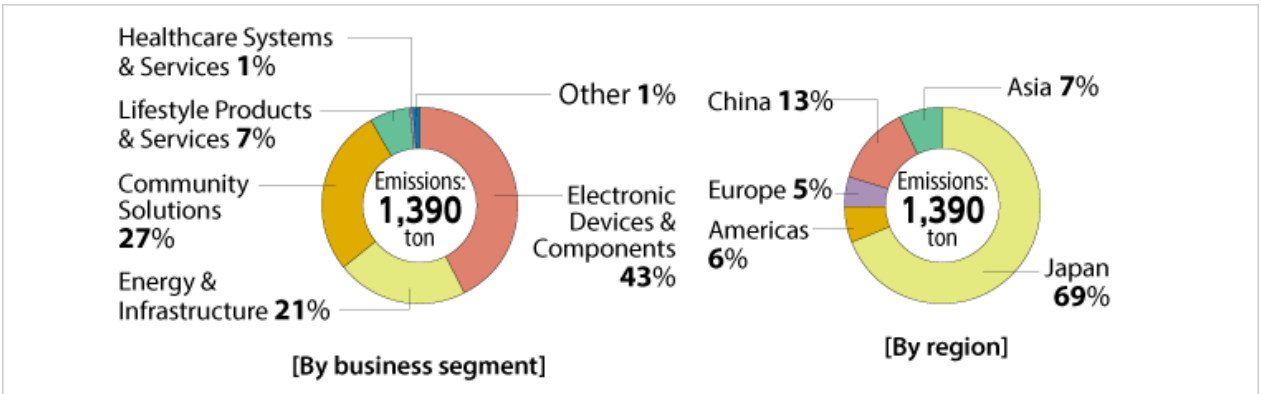
## Future initiatives

In the Fifth Environmental Action Plan, the Group aims to reduce the emissions of substances in FY2015 to 1,967 tons. It plans to use alternative substances and increase material efficiency by improving processes as an incoming countermeasure and introduce emission removal and collection equipment as a outgoing countermeasure.

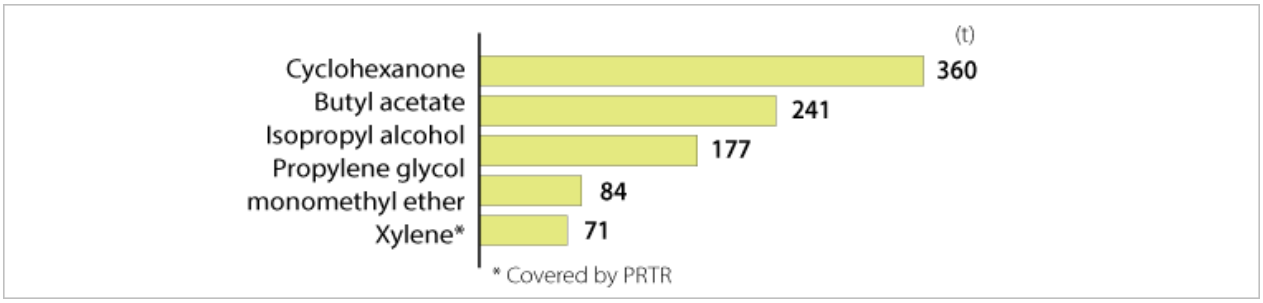
**Emissions of substances targeted for reduction**




**Breakdown of emissions of substances targeted for reduction (FY2013)**

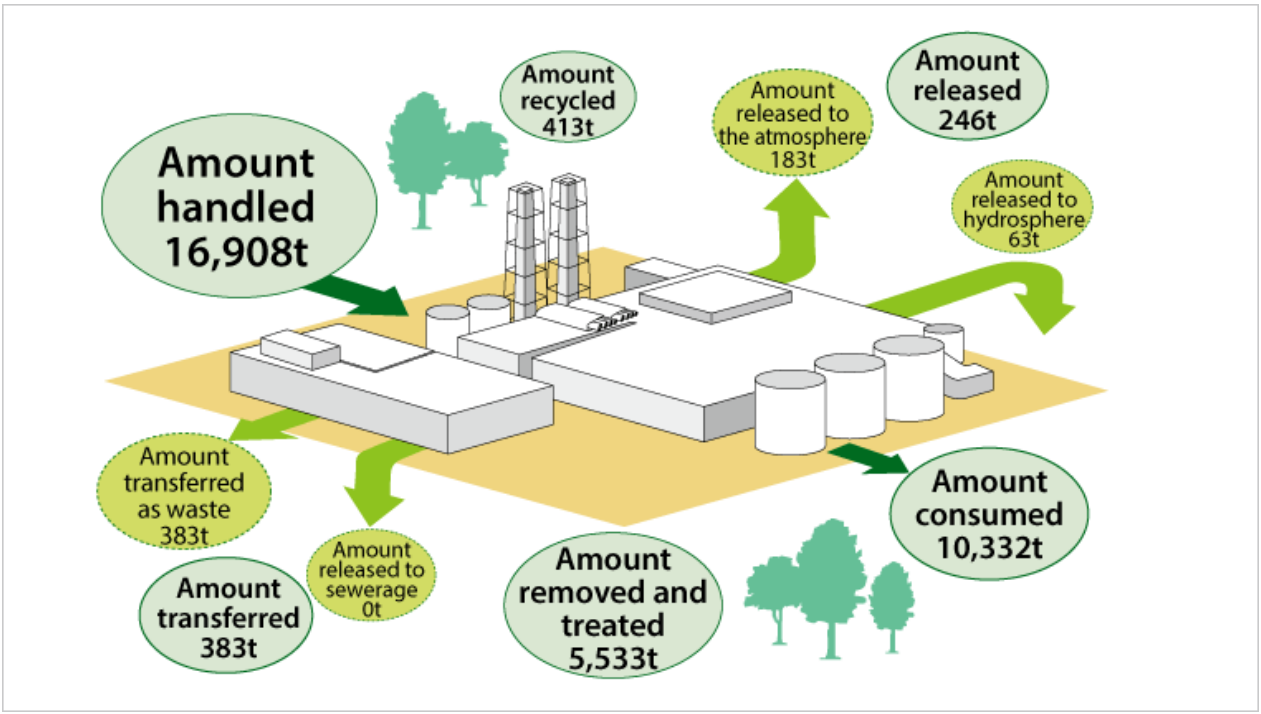


**Emissions of top five substances targeted for reduction (FY2013)**




## PRTR-based material balance

The balance of Toshiba Group's total material volume based on the PRTR Law.



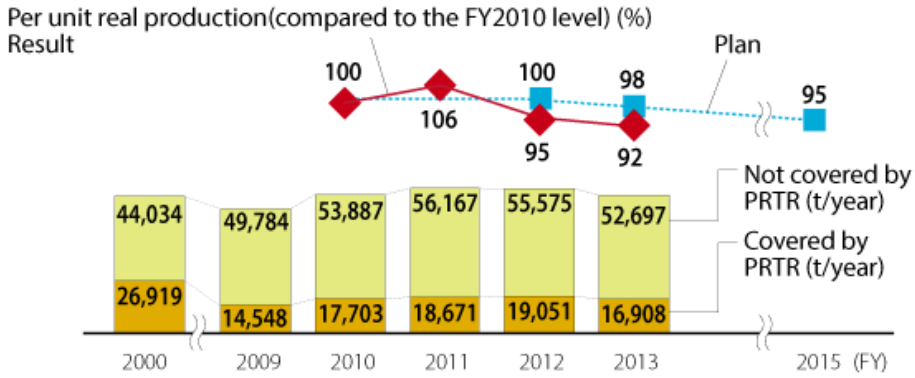

- The amount consumed refers to the amount of substances covered by PRTR that are changed into other substances by chemical reaction or transferred outside along with products whether they are contained therein or accompany them.
- The amount of removed and treated refers to the amount of substances covered by PRTR that undergo such processes as incineration, neutralization, decomposition, reaction treatment and are changed into other substances inside operation sites.
- Landfills at operation sites (stable, controlled, or isolated) are equivalent to the amount emitted. The amount released to public sewerage is categorized as the amount transferred.
- The difference between the amounts transferred and recycled is determined based on whether fees are charged for recycling of the materials. Accordingly, waste is included in the amount transferred if Toshiba Group asks contractors to dispose of it and pay for the service even if the purpose is to recycle it.

# Reduction in the amount of chemical substances handled

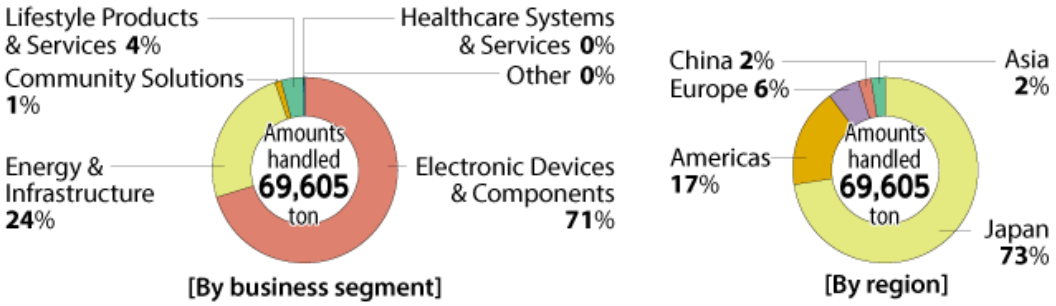
## Results of FY2013 and future initiatives

In FY2013, electronic devices as well as power and social infrastructure systems accounted for over 90% of the total amount of chemicals handled, with substances used for chemical reactions and wastewater treatment raking high among chemicals. The material balance for PRTR-covered chemicals indicates that 33% of them are removed through neutralization and absorption and 61% are consumed together with the products that contain them, which taken together represent the majority of the chemicals handled. It also indicates that only about 1% of the chemicals used are discharged into the atmosphere or hydrosphere. Under the Fifth Environmental Action Plan, the Group is adding the amount of chemicals handled per unit production as a new target indicator, thereby aiming to reduce the amount by 5% compared to the FY2010 level in FY2015.

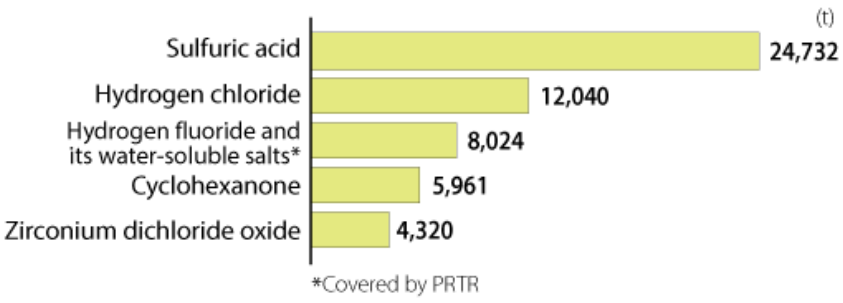
**Amounts of substances targeted for reduction handled**




**Breakdown of the amounts of substances targeted for reduction handled (FY2013)**



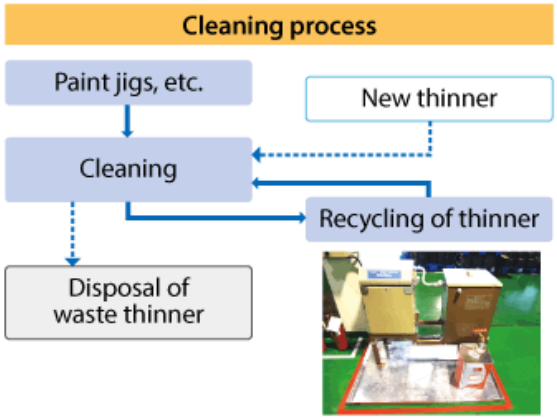

**Amounts of top five substances targeted for reduction handled (FY2013)**



**Case Study: Paint process cleaners: Reduction in the amount handled by recycling for reuse**

**Toshiba Industrial Products Asia Co., Ltd.**

In Vietnam, waste thinner used to clean hanging tools, spray guns, and jigs used in the paint process was commissioned to a cement manufacturer for thermal recycling. In order to reduce both the amount of thinner used and waste thinner treatment costs, the company introduced thinner recycling equipment and began to recycle thinner for reuse. This enabled the company to reduce the amount of new thinner used by about 440 liters per month compared to the pre-introduction level. In addition, the amount of waste thinner discharged was reduced substantially, reducing waste thinner treatment costs by approximately 160 US dollars per month.

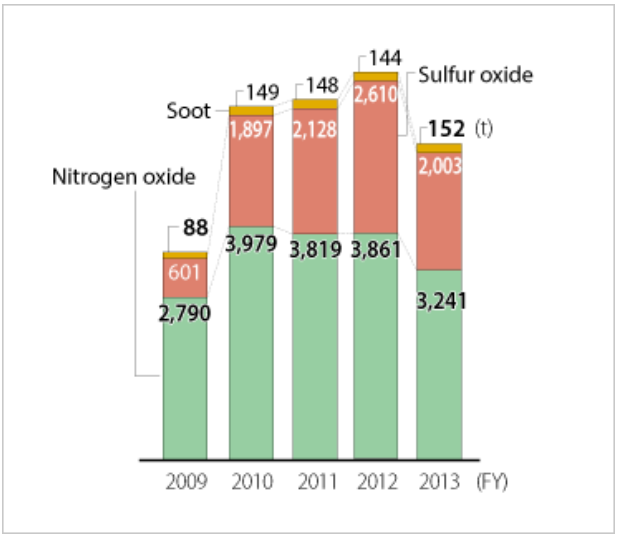


# Management of substances that have impacts on the atmosphere and hydrosphere

Toshiba Group is working to grasp the extent of emissions of sulfur oxides (SOx) and nitrogen oxides (NOx), both of which are major causes of air pollution, as well as water pollutants and ensure appropriate management of such emissions. In addition, each production site voluntarily sets the maximum permissible levels of concentrations for these substances and complies with these prescribed standards. In FY2013, compared to the FY2012 level, we reduced the combined amount of SOx, NOx, and soot emitted into the atmosphere by 18% and the combined amount of suspended matter, total nitrogen, chemical oxygen demand, and other substances discharged into waters by 6%.

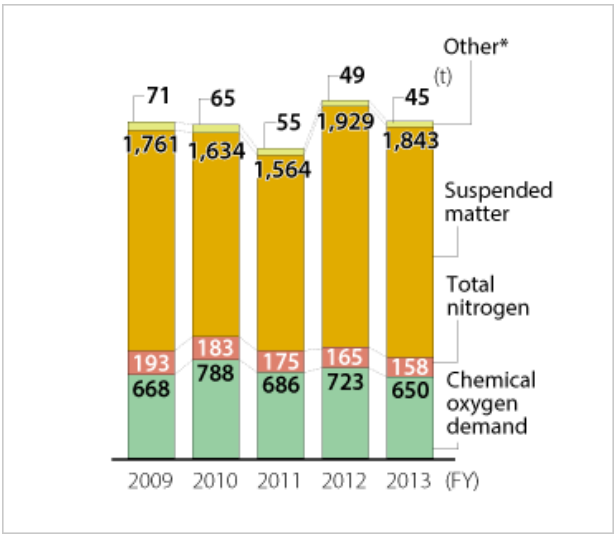
**Impacts on the atmosphere**

Amount of impact = concentration of each substance × amount of substance emitted
(based on the Air Pollution Control Act)




**Impacts on the hydrosphere**

Amount of impact = concentration of each substance × amount of substance discharged
(based on the Water Pollution Control Act)




Starting in FY2007, data include those for Sigma Power Ariake and Sigma Power Tsuchiura.

* N-hexane extracts, phenols, copper, zinc, soluble iron, soluble manganese, total chromium, total phosphorus, and nickel

## Management of ozone-depleting substances

Toshiba Group possesses specified chlorofluorocarbons (CFCs), which deplete the ozone layer, as coolant for air conditioners installed in factories; we appropriately dispose of such CFCs in accordance with the law. In FY2012, the Group had 12.4 tons of specified CFCs and 256 tons of other types of fluorocarbons. In FY2013, due to measures such as the replacement of old air conditioning systems with high-efficiency systems, we reduced the amount of specified CFCs to 11.8 tons and the amount of other fluorocarbons to 550 tons. The amount of specified CFCs possessed by the Group was reduced by 5% compared to the previous year. We will continue to properly manage CFCs.

## Soil and groundwater purification

Toshiba Group is working to purify contaminated soil and groundwater by ascertaining the present condition of soil and groundwater at its production sites. The Group is also taking safety measures for environment-related equipment to prevent contamination with chemicals and reduce environmental risks. A survey of all production sites confirmed contamination at 14 sites, where soil and groundwater contamination with volatile organic compounds (VOCs) has been purified, and the results are being monitored. VOCs in groundwater are collected and eliminated mainly using the water pumping method.

Toshiba Group uses the water pumping method to purify soil and groundwater mainly in areas with high concentrations of VOCs, but if the VOC concentration in such areas is lowered due to progress in purification, the Group takes such measures as stepping up water pumping efforts in other areas with relatively high VOC concentrations. In FY2013, the Group collected 598 kg of VOCs. The amount collected was about 2% less compared to the previous year, but this is chiefly because the amount of VOCs collected per liter of water pumped is gradually decreasing due to the progress made in purification through drastic measures that make the most of the opportunity presented by land modifications, methodological changes (from water pumping to in-situ purification), and declines in relative concentrations of VOCs as a result of purification. In the future, Toshiba Group will continue to advance soil and groundwater purification using appropriate methods, taking into account world trends in the progress of purification technology. At the same time, it will strive to ensure full communication with local governments and residents in neighboring areas through tours of purification facilities and other public relations activities.

**Purification of soil and groundwater contaminated with volatile organic compounds**

| Business and production site | Location | Progress in purification | Purification method *1 | Amount collected *2 (kg) |
|---|---|---|---|---|
| Former site of Asia Electronics Inc.'s Yokohama Operation Center | Yokohama, Kanagawa Prefecture | Being monitored *3 | A,E,G | — |
| Komukai Complex, Toshiba Corp. | Kawasaki, Kanagawa Prefecture | Purification in progress | A,G | 68.9 |
| Himeji Operations (Semiconductors), Toshiba Corp. | Taishi Town, Ibo County, Hyogo Prefecture | Being monitored (North district) | D,F,G | — |
| | | Purification in progress (South district) | A | 240.0 |
| Himeji Operations, Toshiba Corp. | Himeji, Hyogo Prefecture | Being monitored | E,F,G | — |
| Oita Operations, Toshiba Corp. | Oita, Oita Prefecture | Purification in progress | A | 0.5 |
| Fuji Operation, Toshiba Carrier Corp. | Fuji, Shizuoka Prefecture | Purification in progress | A,B | 113.7 |
| Tsuyama Operation, Toshiba Carrier Corp. | Tsuyama, Okayama Prefecture | Purification in progress | A,B | |
| Kawamata Seiki Co., Ltd. | Kawamata Town, Date County, Fukushima Prefecture | Purification in progress | A | 0.0 |
| Former site of Toshiba Shomei Precision Corp.'s Kawasaki Works | Kawasaki, Kanagawa Prefecture | Being monitored | A,E,F | — |

| | | | | |
|---|---|---|---|---|
| Former site of Toshiba Lighting & Technology Corp.'s Iwase Works | Sakuragawa, Ibaraki Prefecture | Purification in progress | A | 0.1 |
| Ibaraki Plant, Lighting Device & Fixture Corp. | Joso, Ibaraki Prefecture | Being monitored | A,B | — |
| Kimitsu Operation Center, Toshiba Components Co., Ltd. | Kimitsu, Chiba Prefecture | Purification in progress | A,B | 174.7 |

*1 Purification method: (A) groundwater pumping, (B) soil gas suction, (C) reduction decomposition, (D) oxidation decomposition, (E) interception containment, (F) removal by excavating soil, and (G) bio-activation.

*2 Amount collected: Amount collected from April 2013 to March 2014.

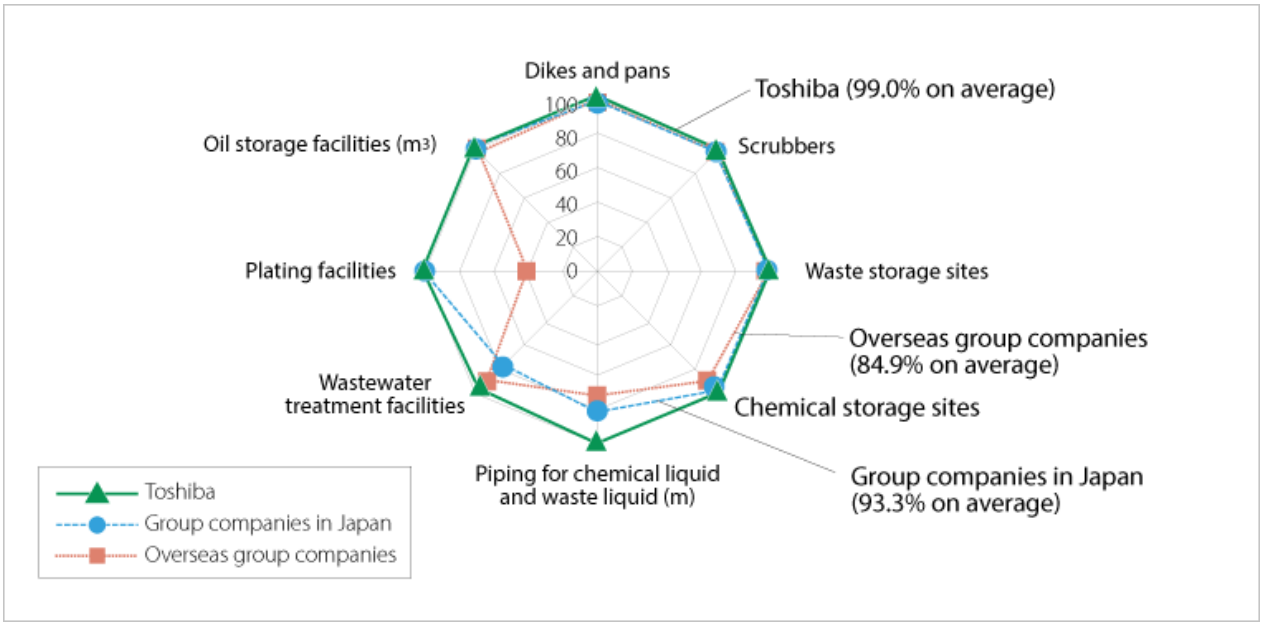
*3 Monitoring: Monitoring to confirm how things develop after work that will allow measures to be taken or purification is completed.

## Preventing contamination and reducing contamination risks

In order to prevent contamination with chemical substances and reduce contamination risks, Toshiba Group independently established the Structural Design Guidelines to prevent leaks of chemicals at its eight types of environment- related facilities such as wastewater treatment plants, and its overseas sites are also promoting continuous improvements in this area. In FY2013, Toshiba Group achieved a compliance rate of 99.0% for all of Toshiba's sites and 93.3% for all of its group companies' sites in Japan.

In its overseas operations, at the time of establishing a new business or relocating a business, Toshiba Group also assesses contamination risks by investigating land use and contamination histories. Assessments are made in accordance with laws and regulations in each country, and Toshiba Group's own rigorous standards are applied in countries without relevant legislation.

**Rate of compliance with the Structural Design Guidelines (FY2013)**




In order to ensure effective prevention of groundwater contamination, an act revising part of the Water Pollution Control Act was promulgated on June 22, 2011 and came into force on June 1, 2012. To prevent groundwater from becoming contaminated with hazardous substances*, new provisions have been added that require those who install facilities where hazardous substances are used, stored, or otherwise handled to comply with structural, equipment, and usage standards to block hazardous substances from entering the ground and to record and maintain records of periodic inspection results. As early as FY1990, Toshiba Group established the Structural Design Guidelines, an initiative that anticipated the purpose of these revisions to the Act, and has since taken actions in accordance with the Guidelines.

* As stipulated in Article 2 of the Order for Enforcement of the Water Pollution Control Act, the 28 hazardous substances subject to regulation include cadmium, lead, and trichloroethylene (as of April 2013).

## Case Study: Soil countermeasures at Kitakyushu Operations

**Kitakyushu Operations, Toshiba Corp.**

In the manufacturing area at Kitakyushu Operations, Toshiba conducted investigations based on the Soil Contamination Countermeasures Act upon the abolition of specified facilities stipulated in the Water Pollution Control Act. Since soil contamination exceeding the minimum permissible level was confirmed in some locations, the company removed the buildings and began work to purify the contaminated soil. Plans call for the company to prevent the spread of contamination to areas around the factory site using the SMW method* and to remove contaminated soil at the site.

* The SMW method involves mixing soil with cement slurry at a construction site and using the mixture to build continuous walls in the ground.

Overview of the construction site

Location where the SMW method was used

## Identifying environmental liabilities

With the enforcement of the Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes, keepers of PCB waste are required to appropriately dispose of PCB waste. The revision of the Enforcement Ordinance in December 2012 moved back the deadline for disposal of PCB waste until March 2027. In March 2014, Toshiba Group reported environmental liabilities of approximately 7.9 billion yen as expenses for the outsourcing of disposing of PCB waste by making it harmless. These expenses cover the disposal of such items as PCB-containing products stored and managed at production sites nationwide. The Westinghouse Electric Company group, a consolidated subsidiary of Toshiba Corp., complies with U.S. federal, state, and other local legislation concerning the discharge of pollutants, disposal of hazardous waste, and other activities that lead to environmental pollution. These legislations have affected and are expected to affect Toshiba Group in the future, but the status of legislation and regulations, the ability to identify sites that require removal of contamination, waste disposal capacity, and other conditions are uncertain, and therefore, it is difficult to accurately estimate final costs incurred by, and the time required for, future decontamination. Of those costs, approximately 6.8 billion yen in environmental liabilities was reported as a loss that could reasonably be estimated in March 2014. The amount of environmental liabilities will be revised according to the progress in environmental assessments and purification work, technological innovation, and the new demands of legislation. These do not have serious effects on the financial condition and business performance of Toshiba Group, but the Group will continue to identify and disclose its environmental liabilities properly in the future.

# Storage and management of PCB

Since 1972, when the manufacture of products using polychlorinated biphenyl (PCB) was discontinued in Japan, Toshiba Group has kept PCB and PCB-containing products under strict surveillance, controlled them, and reported their storage to the relevant authorities in accordance with the Waste Management and Public Cleansing Act and the Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes. In addition to meeting the prescribed storage standards, the Group makes doubly sure through the installation of dikes and double containers and other measures that they are stored appropriately. In order to treat PCB and PCB-containing products safely and as swiftly as possible, Toshiba, along with group companies, has registered some 7,400 transformers and condensers with Japan Environmental Safety Corporation (JESCO), which started to provide wide-area PCB treatment services in FY2005. In FY2013, about 820 transformers, large condensers and oil were treated. In the future, Toshiba Group will continue to treat PCB and PCB-containing products properly in accordance with JESCO's treatment plans.

PCB-containing equipment being transported to Japan Environmental Safety Corp.

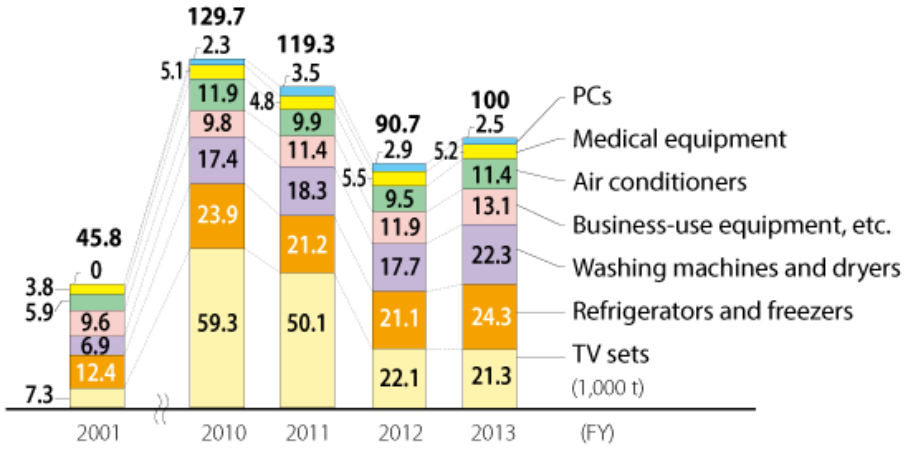
# Recycling end-of-life products globally

In order to ensure efficient use of resources and appropriate treatment of hazardous substances, in accordance with recycling regulations in each country and territory of the world, Toshiba Group is promoting the collection and recycling of products that customers have discontinued use of. The Group promotes collection and recycling of end-of-life products while striving to minimize collection and recycling costs as it complies with each country's recycling scheme. In Japan, in addition to products covered by the Act on the Recycling of Specified Kinds of Home Appliances, the Act on the Promotion of Effective Utilization of Resources, and other relevant laws, the Group has established a unique scheme to collect medical equipment, elevators, MFP/POS systems, and other industrial equipment. Toshiba Group also responds appropriately to the Directive on Waste Electric and Electronic Equipment (WEEE) in Europe*1 and state laws in the United States. Furthermore, it is preparing to respond appropriately to recycling-related laws enacted in China, India, and Australia and those expected to be enacted in the future by governments in Asia, Central and South America, and other regions.

## Results of FY2013

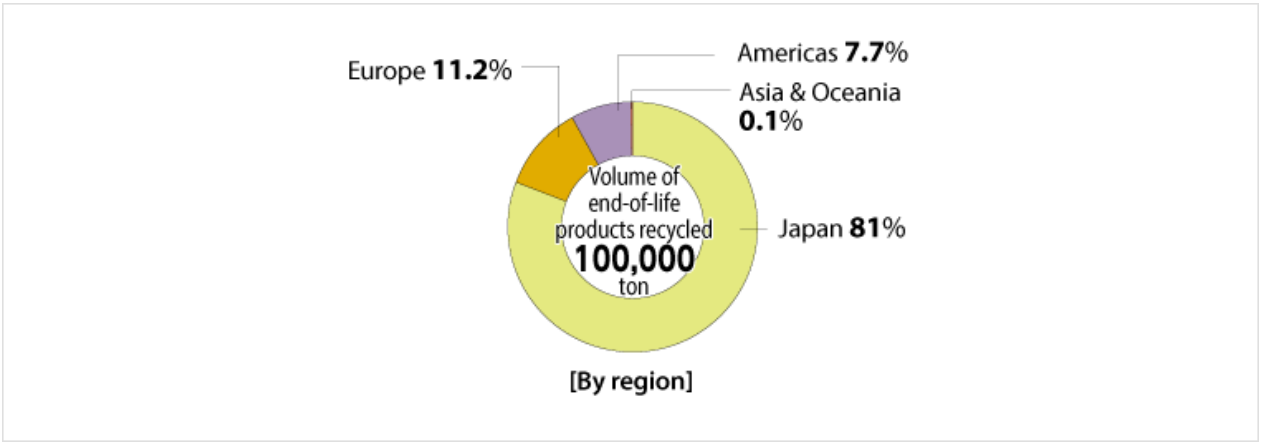
In FY2013, in Japan and abroad, Toshiba Group collected about 123,000 tons of end-of-life products, of which it recycled about 100,000 tons. In Japan, due to a last-minute jump in demand before an increase in the consumption tax rate, the volume of waste refrigerators, washing machines, and air conditioning systems collected increased compared to the previous year. Meanwhile, the volume of end-of-life products collected overseas, including in Europe and North America, remained fairly constant. Therefore, the overall volume of end-of-life products collected increased by about 11,000 tons compared to the previous year.
In the future, Toshiba Group will continue to increase the volume of end-of-life products collected and recycled in Japan and establish a collection scheme in a wider range of its overseas locations.

**Volume of end-of-life products recycled (global)**

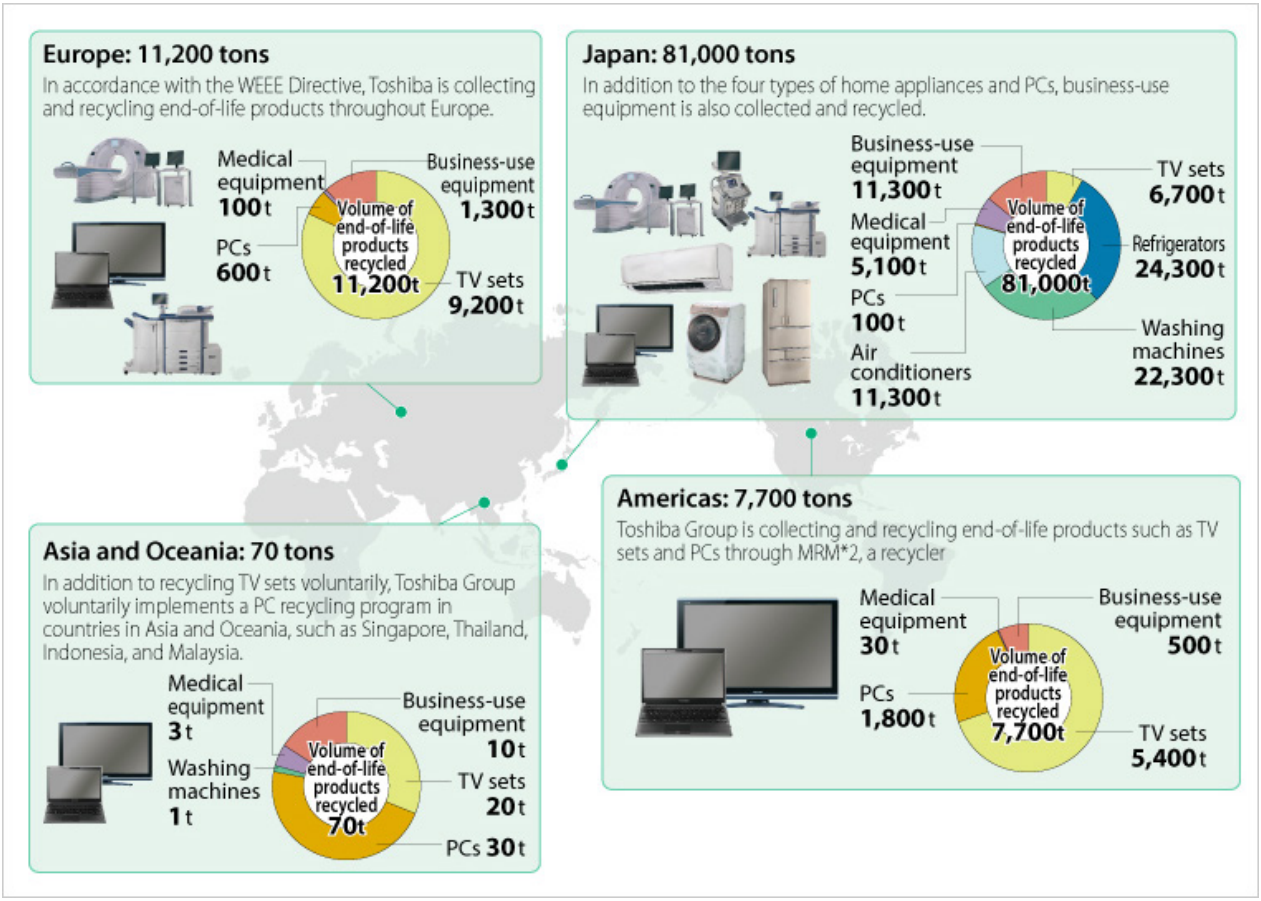



**Breakdown of the volume of end-of-life products recycled (FY2013)**

Looking at the volume of end-of-life products recycled by region, in Japan 80% of the total volume is recycled, with four types of home appliances accounting for the bulk of this. Major items collected and recycled in Europe, which has the next highest recycling ratio after Japan, include TV sets, PCs, multifunctional peripherals (MFPs), and medical equipment. In the U.S., major items include TV sets and PCs. Maintaining the volume of end-of-life products collected in China and other Asian countries as well as preparing to respond to recycling-related laws that are expected to be enacted in other areas are issues to be addressed in the future.




**Volume of end-of-life products recycled by region (FY2013)**




*1 The WEEE Directive is a directive of the European Union concerning waste electrical and electronic equipment.

*2 MRM: Electronic Manufacturers Recycling Management Company, LLC (MRM) is a recycling management firm established jointly with Panasonic Corp. and Sharp Corp. in September 2007. For more details, visit its website: http://www.mrmrecycling.com/ (A new window will open.)

## Case Study 1: Recycling of ink cartridges by voluntary collection in the US

**Toshiba America Business Solutions, Inc.**

Toshiba America Business Solutions, Inc. has worked with Close the Loop® to launch a recycling program to reduce the amount of waste ending up in landfills to zero and is voluntarily collecting end-of-life products, such as printer and fax machine cartridges.
Voluntarily collected products are fully recycled into eLumber™, a waterproof raw material promoted by Close the Loop; eLumber is used as a raw material for fences and outdoor furniture.
In FY2013, the US subsidiary contributed to reducing the amount of waste ending up in landfills by recycling about 173 tons of waste products.

Bench manufactured using eLumber™

## Case Study 2: End-of-life product collection pilot project in Thailand

**Toshiba Thailand Co., Ltd.**

Following the success of Toshiba Sales & Services Sdn Bhd's project to collect end-of-life electric and electronic devices in Malaysia, Toshiba Thailand Co., Ltd. carried out a pilot project to collect end-of-life electric and electronic devices by applying this to Thailand while referencing the opinions of distributors and recyclers. On the first day of the event for collecting devices, Toshiba Thailand collected some 30 items, including TV sets, PCs, refrigerators, and other appliances on a trial basis. The subsidiary will use the knowledge gained through this pilot project about recycling of waste electric and electronic devices to respond to future recycling legislation and in its marketing strategy.

Toshiba's product collection reception counter

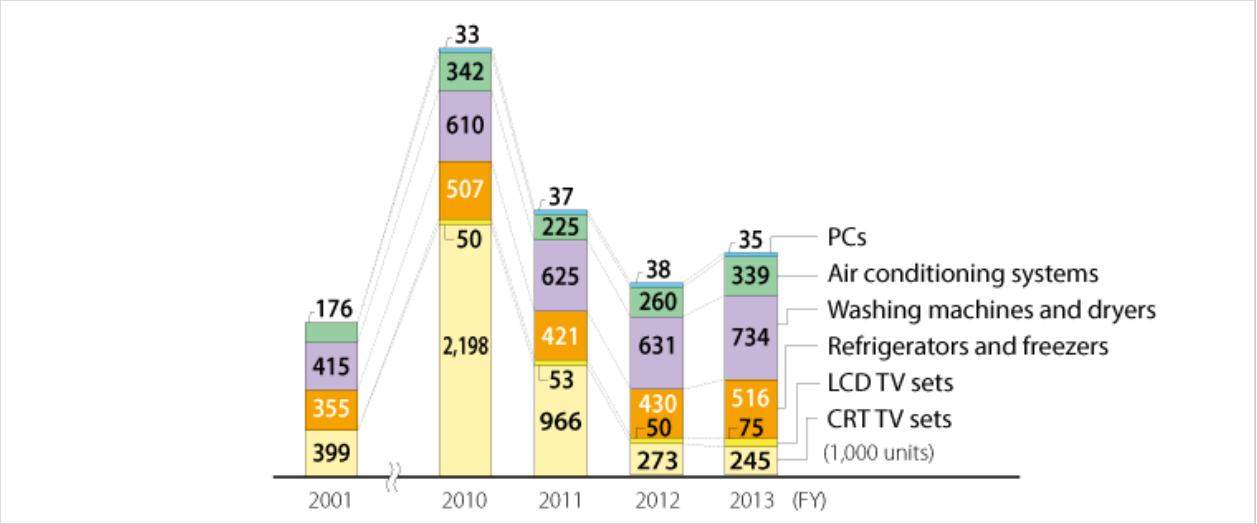
# Recycling of end-of-life products in Japan

In Japan, Toshiba Group is collecting and recycling end-of-life products in accordance with the Act on the Recycling of Specified Kinds of Home Appliances and the Act on the Promotion of Effective Utilization of Resources.

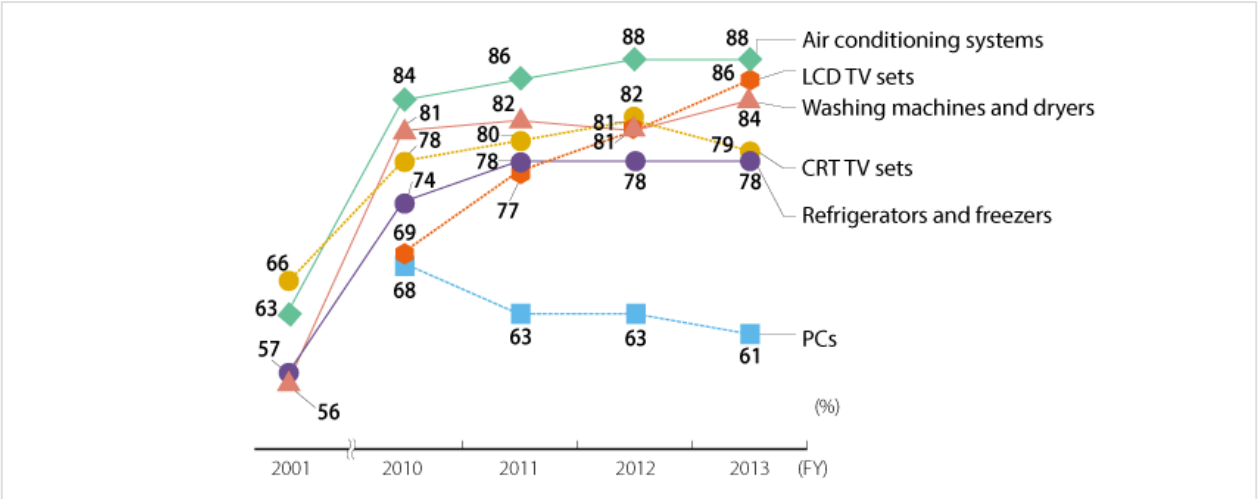
## Results of FY2013

The number of the four types of home appliances collected in FY2013 was approximately 1.91 million. With the cooperation of customers and other relevant parties, the recycling rate for all four types of products rose about 16% compared to the previous year. This was chiefly because of an increase in the number of appliances collected at the end of the fiscal year due to a last-minute jump in demand before the hike in the consumption tax rate. The number of these appliances collected by Toshiba Group represented approximately 15% of the total of all such appliances collected in Japan, remaining at nearly the same level as FY2012. A total of 35,000 end-of-life PCs, an 8% decrease compared to the previous year, were collected from businesses and homes for recycling. Toshiba Group will continue to contribute to resource recycling by recycling the four types of home appliances and PCs.

**Number of four types of home appliances and PCs collected in Japan**

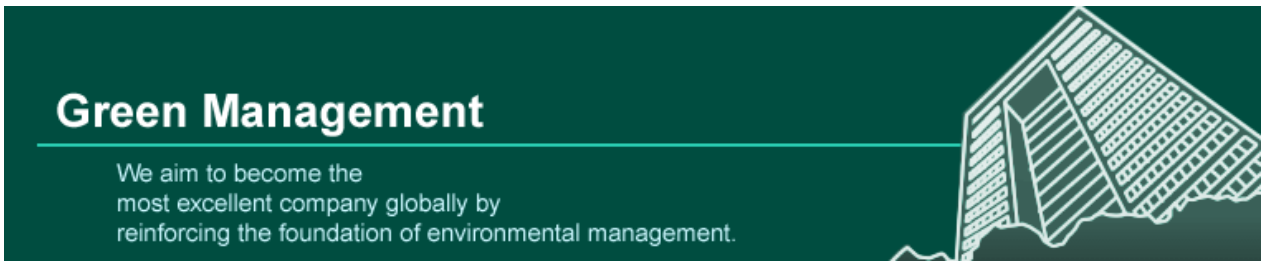



**Percentage of four types of home appliances and PCs recycled in Japan**




## Examples of recycling initiatives

In order to properly treat hazardous substances and effectively collect and recycle valuables, Toshiba Group is working to develop and apply recycling technology and promoting recycling in cooperation with local communities and governments.




## Initiatives for Green Management

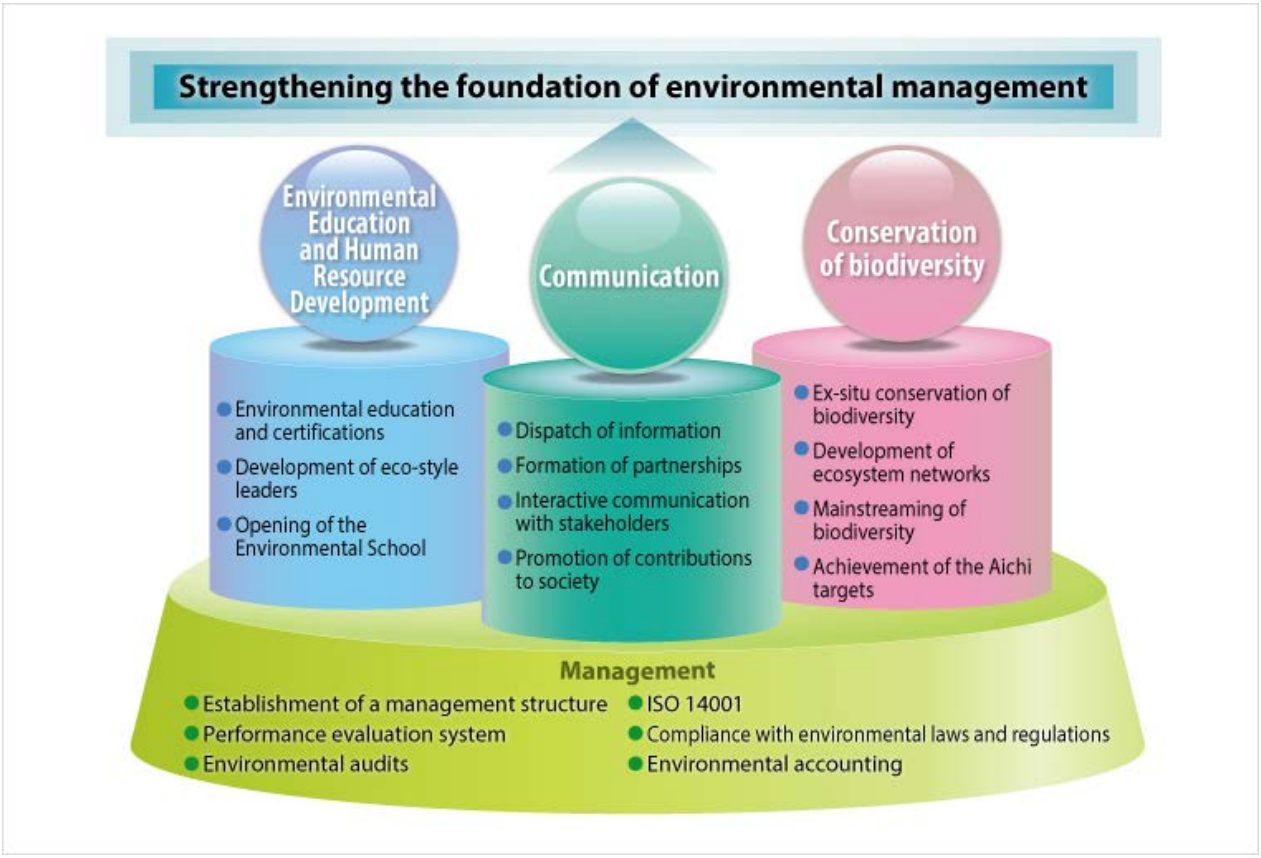
Green Management is an initiative aiming at continuously improving the foundation of environmental management, such as the development of personnel responsible for environmental activities, environmental management systems, and environmental communication as well as conservation of biodiversity. Toshiba Group not only gives top priority to complying with laws and regulations but also provides environmental training to all employees. The Group will further acquire ISO 14001 certification for new overseas business and production sites, and based on our unique environmental audit system, we also strive to promote environmental management, develop environmentally conscious products, check environmental activities at our business and production sites, and raise the level of our environmental activities. Furthermore, we have established a performance evaluation system for in-house and key group companies as an incentive for environmental initiatives. Regarding environmental communication, we communicate information on the environmental aspects of our production activities as well as our products and services in addition to promoting initiatives that encourage collaboration with stakeholders, social contribution programs, and so forth in various countries and territories of the world in order to think about environmental issues together. To conserve biodiversity, we are working to optimize the locations of business and production sites as well as procurement of resources in business operations in accordance with the biodiversity guidelines and to minimize the effects of hazardous substances discharged into the environment. At the same time, we are advancing initiatives that contribute to the conservation of biodiversity through social contribution programs developed in cooperation with local governments and nonprofit organizations.

### Initiatives in FY2013

The Fifth Environmental Action Plan sets three goals for environmental activities, one of which is conservation of biodiversity. Toshiba Group is striving to globally develop ecosystem networks in which production sites play a central role in collaboration with local communities, thus promoting biodiversity conservation that makes the most of each site's characteristics. In FY2013, we completed surveys at all 64 sites and chose indicators for 58 locations. Another goal is environmental education and human resources development; we are developing Toshiba eco-style leaders, who play a leading role in each site's environmental activities. We will step up environmental activities at each site by globally registering 2,000 employees as Toshiba eco-style leaders by FY2015; in FY2013, 443 employees were registered in Japan and abroad.

The third goal is environmental communication. Toshiba Group is expanding environmental communication to connect people around the world by encouraging all of our approximately 200,000 employees to carry out environmental activities that tie-in closely to local communities throughout the world. In FY2013, we implemented a simultaneous light-down campaign globally.

**Initiatives for Green Management**



# Environmental Policy

Toshiba Group promotes environmental management, focusing on environmental issues as one of its top management priorities. It has also formulated the Basic Policy for the Environment which, in accordance with the Group's guiding principles, lays out specific environmental strategies to be shared by all members of the group.

## Toshiba Group's Basic Policy for the Environment

We of the Toshiba Group recognize that the basic responsibility of people living today is to hand over the precious global environment to the next generation in a sound condition. Out of this recognition and in accordance with our Environmental Vision, we will strive to create affluence and ensure coexistence with the earth. We will also contribute to realizing a sustainable society by aiming at achieving a low-carbon and recycle-oriented society that strives to coexist with nature through our environmental activities.

### Promoting environmental management

- Toshiba considers environmental stewardship to be one of management's primary responsibilities and promotes environmental activities in harmony with economic activities.
- Toshiba assesses the impacts of its business activities, products and services on the environment, including with regard to biodiversity, and specifies objectives and targets with respect to the reduction of environmental impacts and prevention of pollution.
- Toshiba strives to continuously improve environmental management through internal audits and reviews of activities.
- Toshiba complies with all laws and regulations, industry guidelines it has endorsed, and its own standards concerning the environment.
- Toshiba strives to enhance the awareness of all its employees with respect to the environment and requires that they make a practical contribution to the environment through their work.
- Toshiba operates globally, and accordingly, promotes environmental activities throughout Toshiba Group.

### Providing environmentally conscious products and services and reducing their environmental impact through business activities

- Toshiba recognizes that natural resources are finite and implements vigorous environmental measures to promote their effective and practical use in terms of both products and business processes.
- Toshiba develops and provides environmentally conscious products and services which contribute to the reduction of environmental impacts throughout their life cycles.
- Toshiba strives to reduce the environmental impacts of all business processes, encompassing design, manufacturing, logistics, sale, and disposal, with a particular focus on the mitigation of climate change, efficient use of resources and management of chemicals.

### As a corporate citizen of planet Earth

- Toshiba contributes to society through its environmental activities, which include the development and provision of excellent, environmentally conscious technologies and products in cooperation with society at large and with local communities.
- Toshiba is committed to maximizing disclosure and transparency in communication with stakeholders and society at large in order to facilitate mutual understanding.

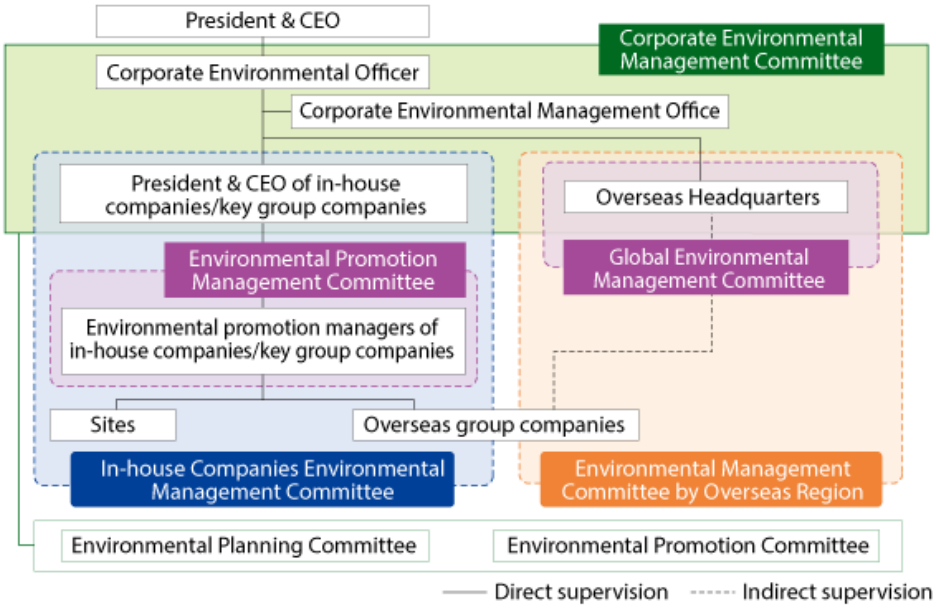
Revised June 1, 2010

# Environmental Management Structure

Toshiba Group is promoting environmental management worldwide as a group. There are four pillars upholding our environmental management: (1) strengthening of the management structure, (2) provision of environmentally conscious products and services, (3) development of environmentally conscious manufacturing, sales and processing, and (4) promotion of communication. We take active measures to promote initiatives focused on these objectives.

The Corporate Environmental Management Office develops and implements corporate-level, important policy, strategy, and measures with the approval of senior managers and makes them fully known to all personnel of the company. Specifically, Toshiba semiannually convenes the Corporate Environmental Management Committee, a group-wide decision-making organization regarding environmental management chaired by the Corporate Environmental Officer, which consists of executive officers, environment management officers of in-house and key group companies, and overseas environmental promotion managers of corporate regional headquarters. Meetings of the Committee make proposals for environmental measures related to management, technological development, production, and sales, confirm and follow up on the progress in the Environmental Action Plan to achieve the Environmental Vision, discuss and decide the overall policy and plans for environmental management, and make the company-wide policy fully known to all managers and employees.

**Toshiba Group environmental management structure**




The following committees are organized as subgroups of the Corporate Environmental Management Committee: the Environmental Planning Committee, which covers environmental management audits, biodiversity conservation programs, and environmental communication; and the Environmental Promotion Committee, which promotes efforts to develop environmentally conscious products and technologies as well as to reduce the impacts of business activities on the environment. These committees formulate detailed plans, identify potential problems, and review measures implemented to solve problems, in order to promote the sharing of information among all company members. Various committees specializing in particular themes are engaged in activities in a wide range of areas under the supervision of these committees.

Corporate Environmental Management Committee

## Enhancement of the global environmental management structure

At the global level, Toshiba Group has established corporate regional headquarters in Europe, the U.S., China and Asia-Oceania in order to collect and share information on environmental policies and regulations in each region and to provide cooperation and support for group companies in these regions in developing effective environmental strategies.

Furthermore, Toshiba Group holds meetings of the Global Environmental Management Committee to promote the Group's environmental management in countries around the world.

We also have an auditing system through which we provide training for local auditors who conduct the environmental audits of overseas sites.

**Global environmental management network**

## Environmental Management Information System

We have developed an Environmental Management Information System in order to collect and manage environmental data required to promote environmental management.

The Environmental Management Information System makes it possible to centrally manage and register not only performance data, such as energy consumption required for business activities and the amount of waste generated from these activities, but also environmental accounting information and the results of site environment audits. It covers all consolidated subsidiaries within the scope of management of Toshiba Group (598 companies in FY2013) and is accessible from countries around the world.

# Environmental Education/Human Resources Development

## Training of eco-style leaders

Toshiba Group is promoting the training of Toshiba eco-style leaders as part of "environmental education and human resource development" one of the new goals set forth in the Fifth Environmental Action Plan. The objective is to certify employees having keen environmental awareness in all divisions as Toshiba eco-style leaders and raise employees' overall environmental awareness through participation in internal environmental programs and events. To become certified, employees must obtain an internal or external environmental license (e.g., passing of the Eco Test sponsored by the Tokyo Chamber of Commerce and Industry or becoming a Toshiba environmental auditor or nature observation instructor).

In FY2013, Toshiba certified 443 employees (335 in Japan and 108 overseas) as Toshiba eco-style leaders compared to the goal of 400 stipulated in the initial training plan. Certified eco-style leaders actively showed leadership in internal events, such as the Global Environmental Action.

### Holding an environmental quiz contest as part of Global Environmental Action

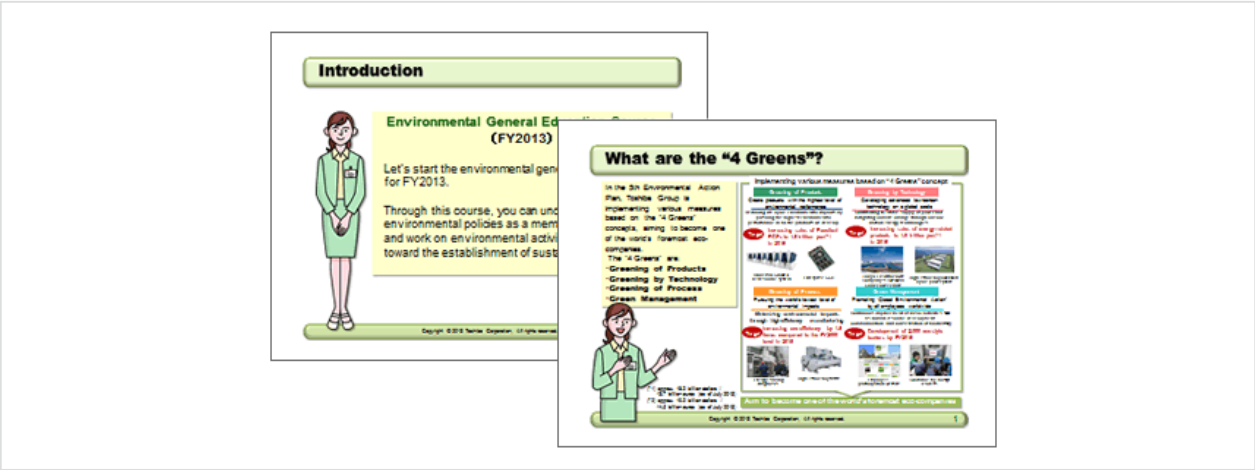
In FY2013, Toshiba turned off all lights at its head office as part of Global Environmental Action. One sub-event leading up to the light-down campaign was an environmental quiz contest held by eco-style leaders.

## Environmental education and qualification

In order to raise the level of environmental activities, we provide environmental education programs for all employees. These education programs are composed of (1) general education courses, (2) ISO 14001 education courses, and (3) specialized education courses, offering curriculums designed to meet the needs of different posts, occupational roles, and specialties. All curricula for these courses are reviewed annually in order to help employees share the latest information.

**Environmental education system**

| General education | ISO 14001 education | Specialized education |
|---|---|---|
| e-learning (for all group company members) | Training courses for internal auditors | Education for the certification of in-house environmental auditors (Site auditors/Technology auditors) |
| Education for new employees | Education for special employees | Introductory course for environmentally conscious design |
| Education for managers | General education | Toshiba Environmental School |




E-learning textbooks for FY2013

We provide training for auditors for our in-house environmental audits, which was put into practice in 1993. In the training program for site auditors, candidates are screened through group education, on-site training and a written examination. After the screening, candidates participate in actual audits as assistants and submit reports in order to be certified as auditors. Technology auditors are certified through group education and a written examination. In FY2013, 13 employees were certified as site auditors, 5 as technology auditors, and 16 as overseas local auditors. The current number of certified auditors is 375.

**Training for auditors (site audit)**

Education and written examination (1 day)
↓
Chosen as a candidate
↓
Practical training
↓
Assistance in audits (2 days, twice)
↓
Submission of audit reports (twice)
↓
Certified as an auditor

■Knowledge required
- Global environmental issues
- Environmental laws and regulations
- ISO environmental management system
- Environmental science and technology
- Toshiba's environmental promotion rules and structural guidelines, etc.

■Requirements for auditors
- Employment in positions equivalent to or higher than section chief
- Auditors are classified into chief auditors, executive auditors, and assistant auditors depending on experience and skills

■Other
- Education sessions are held once a year.
- The pass rate in FY2013 was about 68%.

**Toshiba Group certified auditors in FY2013**

Site auditors: 185　Overseas local auditors: 78　Technology auditors: 112

In FY2014, in order to improve our human resources in the area of environmental management, Toshiba Group will launch Toshiba Environmental School, a program to develop the environmental management abilities of young and mid-level employees in charge of environmental affairs.

**Toshiba Environmental School (Japan)**

**Development of next-generation environmental leaders**

(1) Developing environmental personnel by focusing on young people and raising the bar for such personnel
(2) Raising employee morale
(3) Strengthening employee unity through personnel exchanges within the group
(4) Encouraging employees to realize new efforts by using external instructors effectively

Realizing the significance of contributing to society and business through environmental affairs

**Annual activity schedule**

- Ceremony to enter the school (start of the year)
- Formulating improvement measures on a team-by-team basis
- Confirming courses of action at interim reporting sessions
- Making a report to the director in charge of environmental affairs (end of the year)

* Proposed improvement measures will be reflected in Toshiba Group's environmental management in subsequent years.

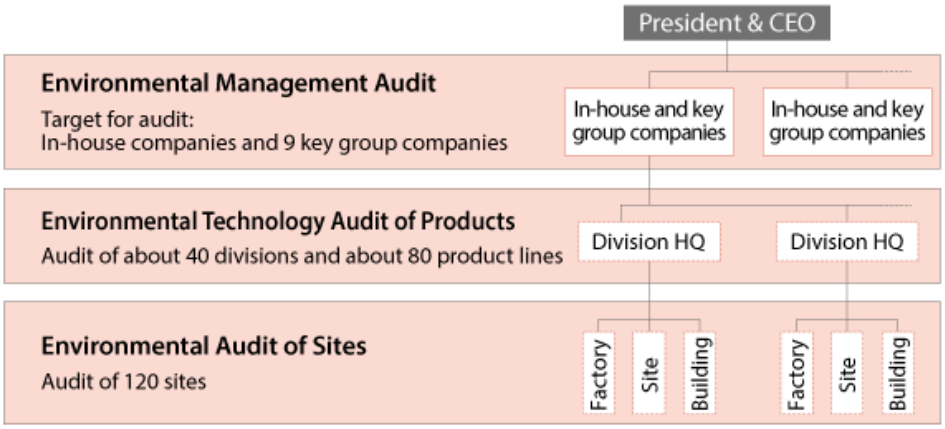
# Environmental Audits

## Toshiba Group's environmental audit system

After conducting environmental audits for the first time in 1989, Toshiba Group developed a comprehensive environmental audit system and has been using the system since FY1993 to conduct audits based on standards established by the group. The audit system initially developed was composed of four categories: (1) management system audits (environmental activity promotion systems, etc.), (2) on-site audits (levels of compliance with rules regarding environmental facilities, etc.), (3) EAP audits (levels of achievement of goals set in the action plan), and (4) technology audits (product environment management system, environmental performance, etc.). Audits were conducted over two days to check these items. The most important of these categories were on-site audits, reflecting the shop-floor approach. This approach is incorporated into the environmental audits of sites conducted today.

Environmental technology audits of products became an independent category in FY1995. Environmental management audits were started in FY2004 to evaluate the level of environmental management in in-house companies and key group companies.

**Toshiba Group's environmental audit system**

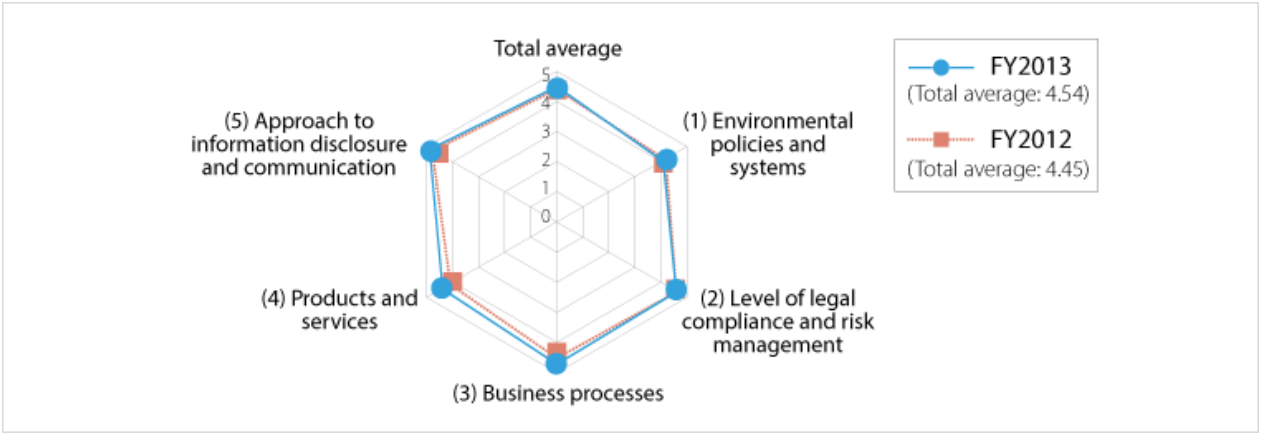



Since FY2006, these multiple audits have been systematized so that they could be conducted in three types of audits: (1) environmental management audits covering in-house companies and nine key group companies: (2) environmental technology audits of products covering about 40 divisions, and (3) environmental audits of sites covering 120 business and production sites, including non-manufacturing sites and non-consolidated subsidiaries. In-house companies and group companies conduct self-audits (self-inspections) within their companies based on the same standards in order to check business and production sites with relatively low levels of environmental impact that are not covered by site environment audits.

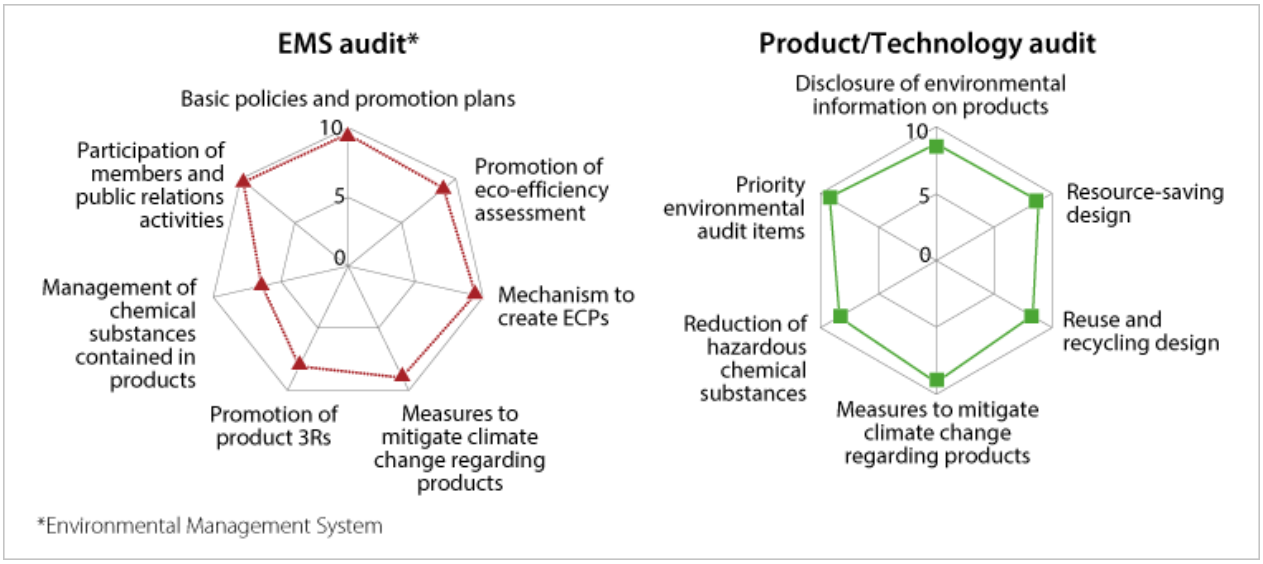
Audit items for these three audits are reviewed annually to improve evaluation level. Since FY2012, we have evaluated the level of environmental management based on audit items linked to the goals of the Fifth Environmental Action Plan, thus stepping up environmental management with the aim of becoming one of the world's foremost eco-companies.

## Audit results (FY2013)

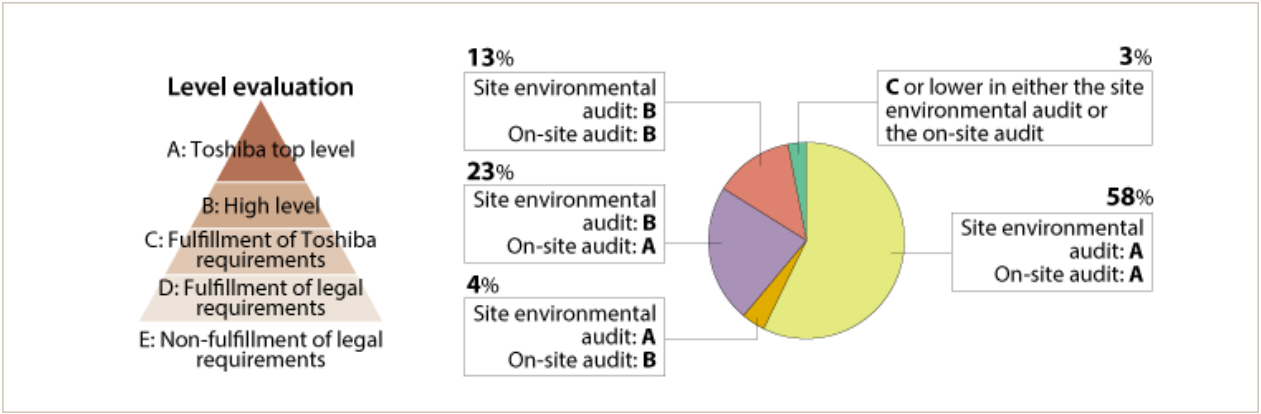
**Environmental management audit (total number of check items: 72)**




**Environmental technology audit of products (total number of check items: 36)**

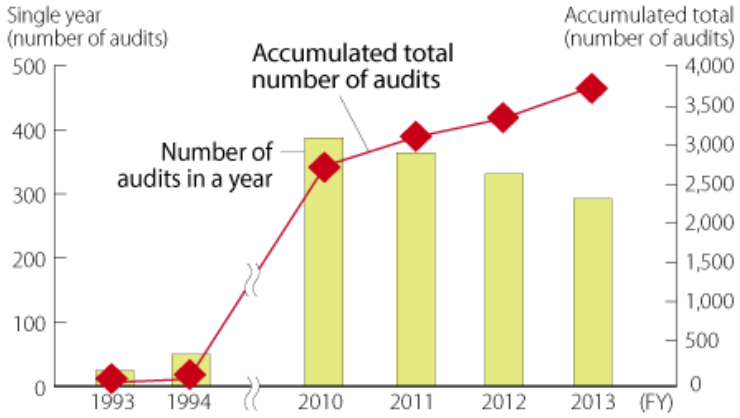



**Environmental audit of sites (total number of check items: 220)**




We conduct over 300 audits, including self-audits, annually, and the total number of audits conducted since FY1993 exceeds 3,700. We also provide in-house training for auditors who conduct audits.

**Toshiba Group's environmental audit records**

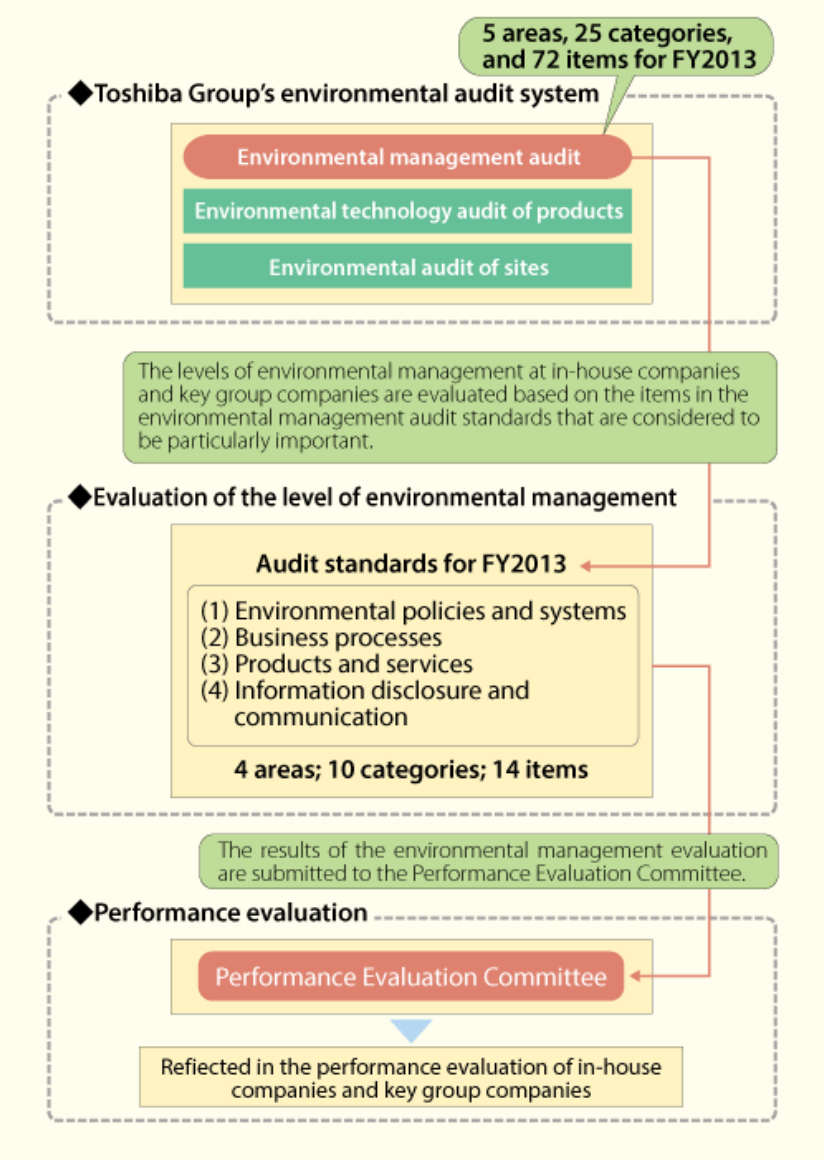


# Performance Evaluation

## Reflecting the level of environmental management in performance evaluation

Based on Toshiba Group's environmental audit system, we evaluate the level of environmental management of all in-house companies and key group companies (nine companies). Of the 72 items divided into 25 categories in 5 areas, we evaluate the level of environmental management based on those identified as priority items for the year in question. In FY2013, we chose 14 performance evaluation items from among 10 categories in 4 areas: environmental policies and systems, business processes, products and services, and information disclosure and communication. Based on these items, we numerically evaluated environmental management. The results of the evaluations of levels of environmental management are presented to the Performance Evaluation Committee and reflected in each company's performance evaluation.

**Performance evaluation system**



# ISO 14001

## ISO 14001

In recognition of the importance of activities at business and production sites in promoting environmental management, we obtained ISO 14001 certification for all of Toshiba Corp.'s 14 domestic business and production sites by 1997 and have maintained the certification to this day. In addition, all of Toshiba Group's 175 business and production sites eligible for certification have obtained ISO 14001 certification. We will also acquire ISO 14001 certification for new overseas business and production sites that will become eligible for certification as a result of future business expansion.

Toshiba Semiconductor & Storage Products Company, Toshiba Power Systems Company, Toshiba Elevator and Building Systems Corporation, and other companies are striving to obtain integrated certification for their headquarters, sales offices, factories, and their group companies in order to develop environmental management systems for entire in-house and group companies.

### Number of ISO-14001-certified sites

| | Eligible sites | Certified sites | Certification rate |
|---|---|---|---|
| Toshiba Corporation's business and production sites | 14 | 14 | 100% |
| Domestic manufacturing sites | 51 | 51 | |
| Domestic non-manufacturing sites | 42 | 42 | |
| Overseas manufacturing sites | 53 | 53 | |
| Overseas non-manufacturing sites | 15 | 15 | |
| **Total** | **175** | **175** | |

28-Aug-14

# Risks and Compliance

## Compliance with environmental laws and regulations

Toshiba Group sets self-regulation standards stricter than legal standards regarding atmospheric emissions and discharges into hydrosphere so as to ensure that all its business and production sites comply with environmental rules. We conduct in-house environmental audits in order to identify potential environmental risks and to prevent environmental accidents. We also develop group-wide initiatives by sharing information, such as the results of internal audits on individual business and production sites, new regulation policies, and examples of accidents in other companies from among group companies.

Unfortunately, there was one violation of a law in FY2013, and we responded swiftly and appropriately to the problem. Using the lesson learned from this problem, we will strive to prevent the recurrence of similar problems and make further efforts to ensure compliance with relevant laws and ordinances in the future.

### Toshiba Hokuto Electronics Corporation

**An amount of fluorine exceeding the statutory standard was detected in the wastewater in December 2013.**

As a result of on-site inspections by an administrative agency, 29 mg/L of fluorine, which exceeded the minimum permissible standard of 15 mg/L, was detected in wastewater. The company clarified the cause of the violation and took measures to prevent recurrence of similar problems.

## Response to environmental risks

The Risk Compliance Committee examines how to cope with diversified risks under the direct supervision of the President and also takes measures to prevent environmental risks.

If any environmental risk should materialize, the Corporate Environment Management Division and the environmental promotion managers and other concerned parties of in-house companies, key group companies and business and production sites work in collaboration under the direction of the Corporate Environmental Officer to implement appropriate measures, including sharing information, checking relevant business and production sites and preventing recurrences.

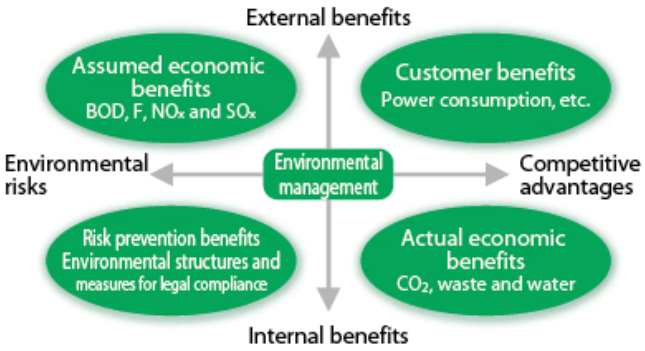
# Environmental Accounting

## As a tool for environmental management

With a view to promoting environmental management, Toshiba Group is working to introduce an environmental accounting approach aimed at collecting accurate data on investments and costs required for its environmental conservation initiatives and analyzing the collected data in order to reflect investment effects and cost benefits in managerial decision making.

Environmental costs are calculated in accordance with the Ministry of the Environment's Environmental Accounting Guidelines 2005. As for environmental benefits, Toshiba Group's environmental accounting assumes four basic concepts: competitive advantages, prevention of potential environmental risks, internal benefits and external benefits. We classify benefits into four categories based on combinations of these concepts to develop a comprehensive approach to environmental accounting: customer benefits due to reduced power consumption of products, actual economic benefits resulting from reductions in the amount of waste and energy consumed, assumed economic benefits estimated to result from reductions in air pollutant emissions, benefits resulting from preventing potential risks. These categories provide useful indices for environmental management.

**Environmental accounting as a tool for environmental management**



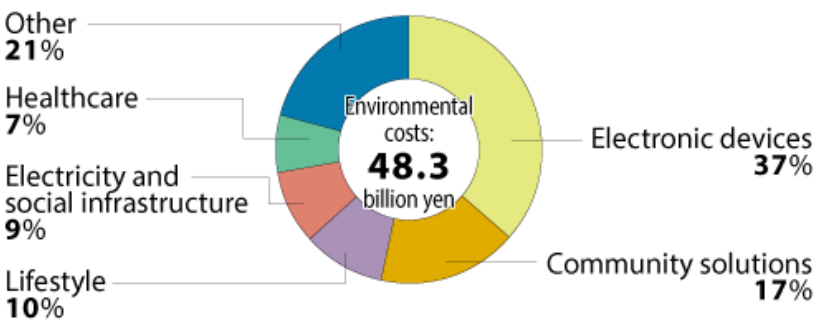

## Environmental costs and benefits

Total environmental costs increased by 12% from the previous year to 48.3 billion yen. Of the different business sections, the electronic device section, which handles semiconductors, accounted for the largest percentage of total environmental costs, followed by the community solutions section.

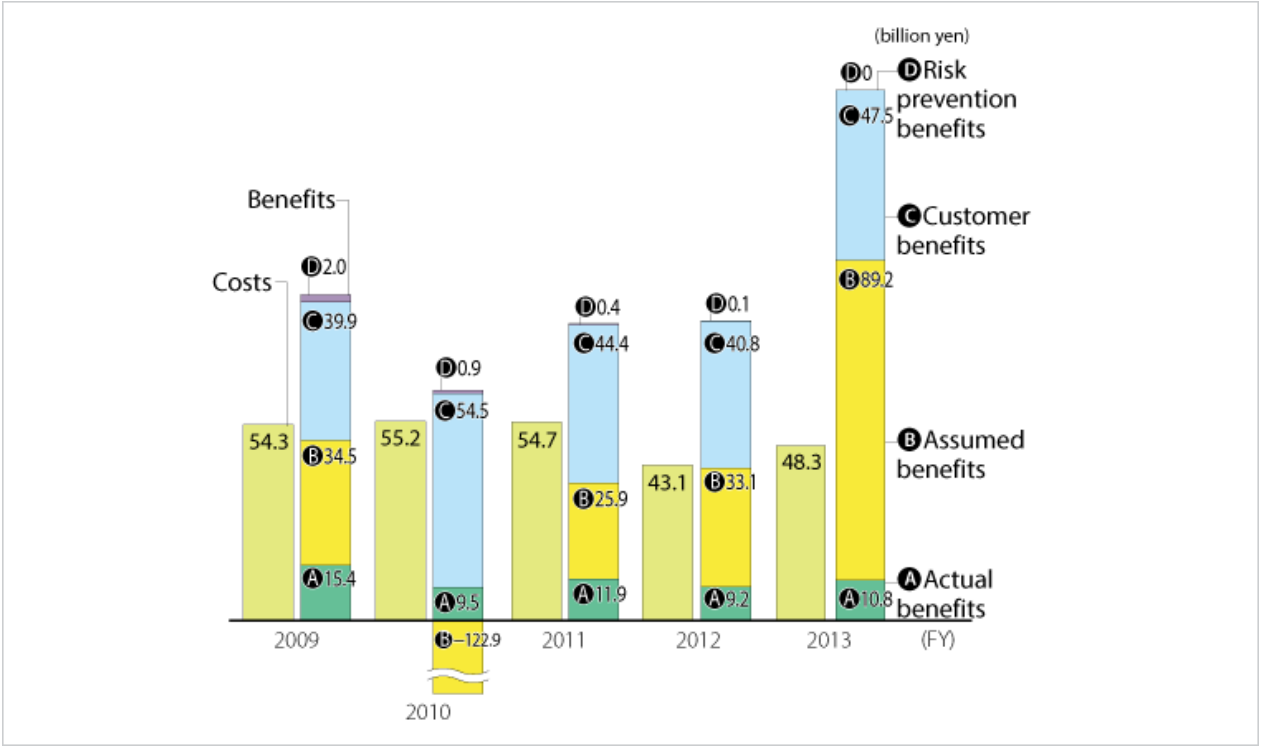
Total investments increased by 38% from the previous year to nine billion yen, with environmental investments accounting for 2.7% of total investments.

The total amount of environmental benefits was 147.5 billion yen, a 77% increase compared to the previous year: 10.8 billion yen for actual benefits, 89.2 billion yen for assumed benefits, 47.5 billion yen for customer benefits, and 30 million yen for risk prevention benefits.

**Breakdown of environmental costs by business segment (FY2013)**



**Environmental costs and benefits (FY2009 - FY2013)**



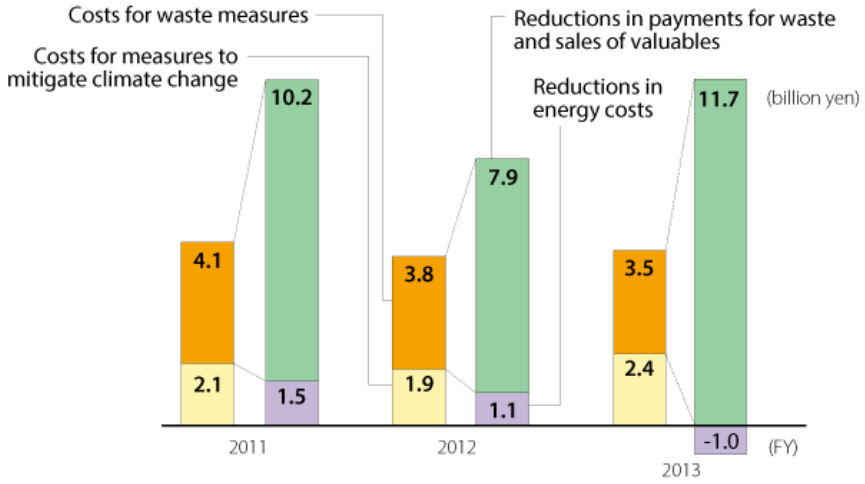

## Cost benefits of environmental management measures

The figure below shows the changes in the cost benefits of measures for climate change mitigation and waste disposal over the past three years. We compared the costs incurred in taking measures to mitigate climate change and dispose waste against the total amount of reductions in payments related to energy consumption and waste disposal compared to the previous year as well as sales of valuables during the current year. In the table below, costs are expressed as business area costs and benefits as actual benefits.

In FY2013, reductions in payments related to energy consumption were negative because electricity charges, fuel expenses, and other payments increased by one billion yen compared to FY2012. On the other hand, measures to dispose of waste brought larger benefits than the costs incurred taking them.

The major issue to be addressed going forward is how to overcome two conflicting problems: an increase in emissions of environmental pollutants as a result of business expansion and the need for cost reductions. Toshiba Group will also analyze the cost benefits and other financial aspects of environmental management measures in more detail.

**Cost benefits of measures for climate change mitigation and waste disposal**



**Environmental costs**

Unit: million yen

| Category | Description | Investment | Costs |
|---|---|---|---|
| Business area costs | Reduction in environmental impact | 7,891 | 20,012 |
| Upstream/downstream costs | Green procurement, recycling, etc. | 570 | 950 |
| Administration costs | Environmental education, EMS maintenance, tree planting on factory grounds, etc. | 200 | 4,445 |
| R&D costs | Development of environmentally conscious products, etc. | 352 | 22,335 |
| Public relations costs | Support for local environmental activities, donations, etc. | 14 | 67 |
| Environmental damage restoration costs | Restoration of polluted soil, etc. | 0 | 527 |
| | **Total** | **9,027** | **48,335** |

| | |
|---|---|
| **Total capital investment** | **340.2 billion yen** |
| **Total R&D costs** | **329.5 billion yen** |

**Environmental benefits**

Unit: million yen

| Category | Reductions in environmental impact | | Benefits measured in monetary values (millions of yen) |
|---|---|---|---|
| Actual benefits | Energy | 994,068 (GJ) | -1,030 |
| | Waste | 2,741 (t) | 11,747 |
| | Water | 134,000 ($m^3$) | 95 |
| Assumed benefits | Reduction in the amount of chemicals discharged | 1,332 (t) | 89,167 |
| Customer benefits | Reductions of $CO_2$ emissions during use | 4.30 million (t-$CO_2$) | 47,504 |
| Risk prevention benefits | | | 29 |
| | | **Total** | **147,512** |

Reductions in environmental impact for actual and assumed benefits indicate differences between FY2012 and FY2013. Reductions in environmental impact for customer benefits are based on comparisons between the benchmark year (in principle FY2000) and FY2013.

## Attempt at natural capital accounting

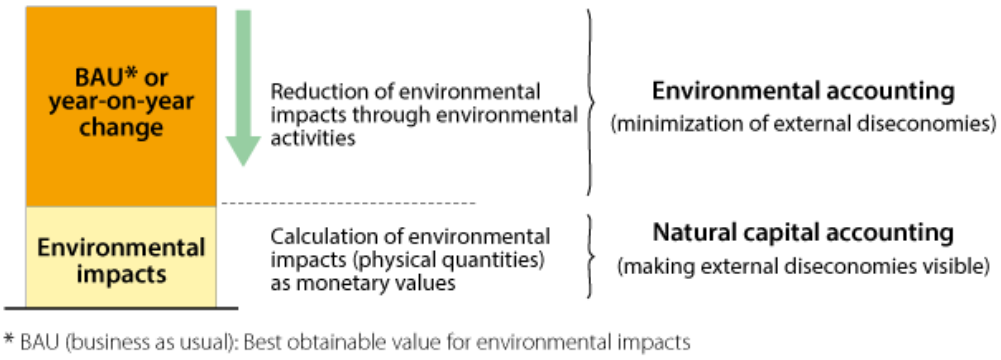
In June 2012, UNEP FI* issued the Natural Capital Declaration (NCD). NCD requires that natural capital, which generates value worth several trillion dollars annually, be evaluated as is done for social capital and financial capital. The World Bank and other institutions are discussing natural capital accounting, which includes the value of natural capital in corporate accounting. We are attempting to perform natural capital accounting as part of our environmental initiatives.

At present, environmental accounting is an initiative for aggregating the costs of environmental protection activities and analyzing the benefits obtained from such activities-in other words, measuring the “minimization of external diseconomies.” However, environmental impacts associated with business activities cannot be reduced to zero. Therefore, Toshiba Group is considering viewing final environmental impacts as economic value and making external diseconomies visible, which the Group regards to be a form of natural capital accounting.

Toshiba Group's concept of natural capital accounting can be summarized as shown in the chart below. The chart indicates that reduction of environmental impacts leads to minimization of effects on natural capital. In the future, we will continue to further raise our level of environmental management by effectively using the two tools of environmental accounting and natural capital accounting.

* UNEP FI: United Nations Environmental Programme Financial Initiative

**Toshiba Group's concept of natural capital accounting**

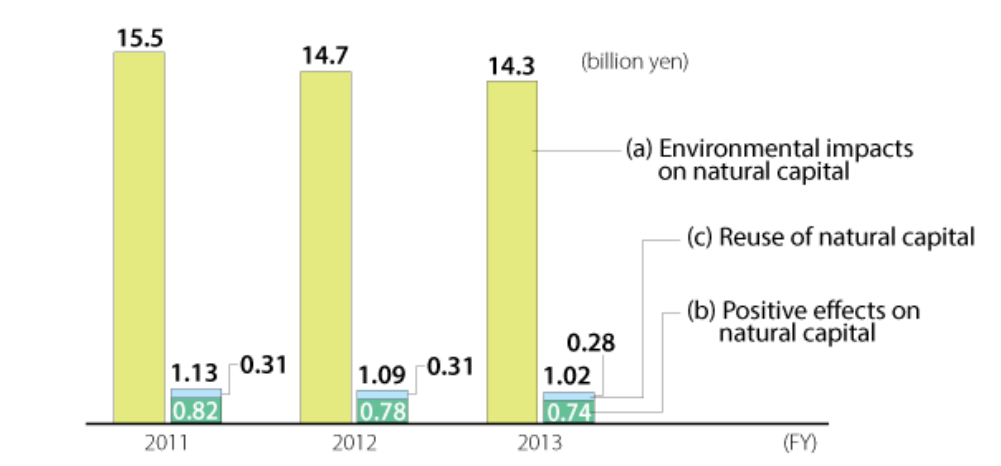



Toshiba Group calculated environmental impacts for natural capital during the past three years; the results indicate that in FY2013, such impacts were reduced by 2.7% compared to the previous year to 14.3 billion yen.

On the other hand, the costs required for biodiversity conservation, factory afforestation, and other initiatives that positively affected natural capital totaled 740 million yen. Furthermore, the results of calculations of business activities that were carried out without using natural capital-for which examples include water reuse and recycling as well as effective use of rainwater at business sites-had a worth of 280 million yen in terms of monetary value.

Toshiba Group is considering a system for comparing these results to offset or reduce its environmental impacts for natural capital; we found that the reduction rate changed from 7.3% to 7.4% to 7.1% over the past three years. In the years to come, the Group will strive to improve the reduction rate by reducing environmental impacts for natural capital through reduction of such impacts and expanding business activities that do not affect natural capital as well as those that positively affect natural capital.

**Results of natural capital accounting calculations**




(a) Environmental impacts covered

- Greenhouse gases (e.g., $CO_2$, PFC, $SF_6$, and HFC)
- Environmental impacts on the air (factory dust, NOx, and SOx)
- Environmental impacts on waters (e.g., COD, all nitrogen, and all phosphorus)
- Waste (e.g., metal scraps, cinders, sludge, wastepaper, waste acids, and waste plastics)

* LIME is used to calculate impacts as monetary values. For details of LIME, refer to Product Eco-efficiency.

(b) Costs covered

- Costs of biodiversity conservation activities
- Nature conservation and afforestation costs
- Donations and financial support associated with environmental protection

(c) Natural capital covered

- Reuse and recycling of water as well as effective use of rainwater

* Calculated using the price of one cubic meter of industrial water

# Report, Website

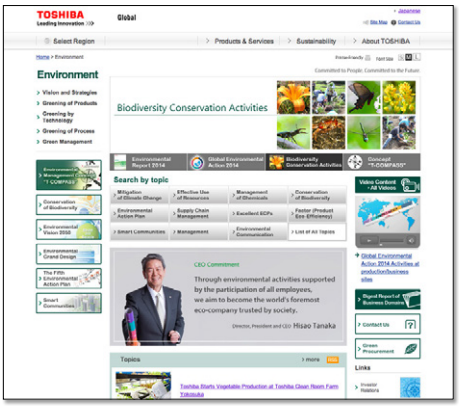
## Toshiba Group Environmental Report

Since the publication of the first volume of its environmental report in FY1998, Toshiba Group has disclosed its environmental information every year. Toshiba Group Environmental Report 2013, which was published last year, received the Excellence Award in the environmental reporting category at the 17th Environmental Communication Awards hosted by the Ministry of the Environment.


Environmental Report 2014
(Japanese, English, Chinese)

## Toshiba Group Environmental Website

Environmental website discloses more detailed information in a timely manner.
Videos of exhibitions and events are also posted on the website.




Environmental Website
http://www.toshiba.co.jp/env/en/index.htm

# Third-Party Evaluation

In order to improve the reliability of the environmental performance data presented in this report, Toshiba Group requested Lloyd's Register Quality Assurance Ltd.* to conduct a third-party verification of the data.

Global data regarding the results for FY2013 was reviewed to check the processes of the collection, aggregation, and internal verification of data and the accuracy of aggregated data.

* LRQA is a certification body approved by over 50 accreditation agencies in areas such as quality, the environment, energy, occupational safety, food safety, medical devices, automobiles, aeronautics, and railways.

Lloyd's Register LRQA

**LRQA Assurance Statement**

**Relating to Toshiba Corporation's environmental performance data within the Environmental Report 2014 for the fiscal year 2013**

This Assurance Statement has been prepared for Toshiba Corporation in accordance with our contract but is intended for the readers of this Report.

**Terms of Engagement**

Lloyd's Register Quality Assurance Ltd. (LRQA) was commissioned by Toshiba Corporation to provide independent assurance on the Toshiba Group's (TOSHIBA) environmental performance data within its Environmental Report 2014 ("the Report") for the fiscal year 2013, that is 01 April 2013 to 31 March 2014, to a limited level of assurance using LRQA's verification approach and ISO 14064–3:2006 "Specification with guidance for validation and verification of greenhouse gas assertions". LRQA's verification approach is based on current best practice and uses the principles of AA1000AS (2008) - Inclusivity, Materiality, Responsiveness and Reliability of performance data and processes defined in ISAE3000.

Our assurance engagement covered TOSHIBA's global operations and activities and specifically the following requirements:

- Ascertaining whether the Report is in accordance with TOSHIBA's in-house reporting procedures and that the Report discloses TOSHIBA's environmentally material issues
- Evaluating the accuracy and reliability of the environmental performance data within the Report. The datasets are defined as:
  - Greenhouse gas[1] : Scope 1, Scope 2, and Scope 3 (Categories[2] 4[3] and 11) emissions
  - Wastes : total amount generated, recycled, and disposed of in metric tons
  - Water[4] : total volume consumed, reused and recycled in million cubic meters
  - Wastewater and water quality indicators : volume discharged in million cubic meters and total amount of suspended solids (T-S), chemical oxygen demand (COD), and nitrogen (T-N) discharged in metric tons
  - Air emission indicators : total amount of nitrogen oxides ($NO_x$), sulphur oxides ($SO_x$) and particulate matters (PM) emitted in metric tons
  - Chemical substances: total amount handled and total amount emitted in metric tons.

Our assurance engagement excluded the data and information of TOSHIBA's suppliers, contractors and any third-parties mentioned in the Report.

LRQA's responsibility is only to TOSHIBA. LRQA disclaims any liability or responsibility to others as explained in the end footnote. TOSHIBA's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the Report and for maintaining effective internal controls over the systems from which the Report is derived. Ultimately, the Report has been approved by, and remains the responsibility of TOSHIBA.

**LRQA's Opinion**

Based on LRQA's approach nothing has come to our attention that would cause us to believe that TOSHIBA has not:

- Prepared their Report in accordance with TOSHIBA's in-house reporting procedures
- Disclosed accurate and reliable environmental performance data.

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of the professional judgement of the Verifier.
Note: The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites.

**LRQA's Approach**

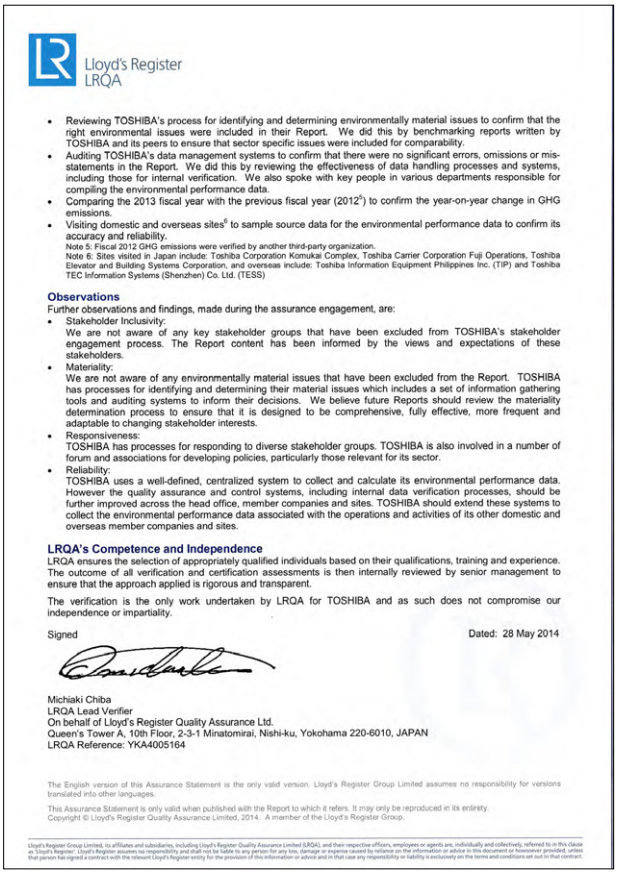
LRQA's assurance engagement was carried out using LRQA's verification approach and ISO 14064-3 for greenhouse gas data. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Assessing TOSHIBA's approach to stakeholder engagement to confirm that issues raised by stakeholders were captured correctly. We did this by reviewing its past and current engagements with its main stakeholders through various communication tools and events that establish and promote dialogues and information exchanges.

[1] Scope 1, 2, and 3 emissions are as defined in The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard.
[2] The categories of the Scope 3 emissions are as defined in the Greenhouse Gas Protocol – Corporate Value Chain (Scope 3) Accounting and Reporting Standard, Table 5.3.
[3] Scope 3 emissions attributed to Category 4 (Upstream transportation and downstream distribution) only included those Japan.
[4] Water consumption data included those sourced from the city water supply system, underground, industrial, and other water supply such as rainwater.

This document is subject to the provision on page 2.





Lloyd's Register LRQA

- Reviewing TOSHIBA's process for identifying and determining environmentally material issues to confirm that the right environmental issues were included in their Report. We did this by benchmarking reports written by TOSHIBA and its peers to ensure that sector specific issues were included for comparability.
- Auditing TOSHIBA's data management systems to confirm that there were no significant errors, omissions or mis-statements in the Report. We did this by reviewing the effectiveness of data handling processes and systems, including those for internal verification. We also spoke with key people in various departments responsible for compiling the environmental performance data.
- Comparing the 2013 fiscal year with the previous fiscal year (2012[5]) to confirm the year-on-year change in GHG emissions.
- Visiting domestic and overseas sites[6] to sample source data for the environmental performance data to confirm its accuracy and reliability.

Note 5: Fiscal 2012 GHG emissions were verified by another third-party organization.
Note 6: Sites visited in Japan include: Toshiba Corporation Komukai Complex, Toshiba Carrier Corporation Fuji Operations, Toshiba Elevator and Building Systems Corporation, and overseas include: Toshiba Information Equipment Philippines Inc. (TIP) and Toshiba TEC Information Systems (Shenzhen) Co. Ltd. (TESS)

**Observations**

Further observations and findings, made during the assurance engagement, are:

- Stakeholder Inclusivity:
  We are not aware of any key stakeholder groups that have been excluded from TOSHIBA's stakeholder engagement process. The Report content has been informed by the views and expectations of these stakeholders.
- Materiality:
  We are not aware of any environmentally material issues that have been excluded from the Report. TOSHIBA has processes for identifying and determining their material issues which includes a set of information gathering tools and auditing systems to inform their decisions. We believe future Reports should review the materiality determination process to ensure that it is designed to be comprehensive, fully effective, more frequent and adaptable to changing stakeholder interests.
- Responsiveness:
  TOSHIBA has processes for responding to diverse stakeholder groups. TOSHIBA is also involved in a number of forum and associations for developing policies, particularly those relevant for its sector.
- Reliability:
  TOSHIBA uses a well-defined, centralized system to collect and calculate its environmental performance data. However the quality assurance and control systems, including internal data verification processes, should be further improved across the head office, member companies and sites. TOSHIBA should extend these systems to collect the environmental performance data associated with the operations and activities of its other domestic and overseas member companies and sites.

**LRQA's Competence and Independence**

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

The verification is the only work undertaken by LRQA for TOSHIBA and as such does not compromise our independence or impartiality.

Signed Dated: 28 May 2014

Michiaki Chiba
LRQA Lead Verifier
On behalf of Lloyd's Register Quality Assurance Ltd.
Queen's Tower A, 10th Floor, 2-3-1 Minatomirai, Nishi-ku, Yokohama 220-6010, JAPAN
LRQA Reference: YKA4005164

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## Reference View

Toshiba has established and implemented highly reliable data collection and reporting system for the environmental performance data, but areas of improvement were identified to prevent errors in data entry where many different staff are involved worldwide. It is recommended to continuously consider effective measures to prevent site level data entry, improve traceability, and strengthening internal data verification in order to achieve the higher credibility of the disclosed data.

# Advertisements

## Advertisements

### Smart communities

In FY2013 to FY2014, Toshiba Group deploys corporate advertisements focusing on the smart community projects we are implementing in Japan and abroad in order to realize a world in which all people lead affluent lifestyles in harmony with the Earth.

One example of these advertisements is the “Lyon Toshiba smart community project,” which features initiatives to reduce environmental impacts such as $CO_2$ emissions and make energy consumption visible through the introduction of a smart community. Another is the “Los Alamos Toshiba smart community project,” which focuses on a system to support the balance between electricity supply and demand. Through these advertisements, we communicate Toshiba's stance aiming to realize a society in which all people live comfortable lives.


“Lyon Toshiba smart community project” (TV commercial)


“Los Alamos Toshiba smart community project” (TV commercial)

### Advertisement of LED light bulbs

Toshiba Group has also run TV commercials and newspaper advertisements to announce the delivery of LED lighting to New York's Grand Central Station and explain that LED lamps have a long lifespan, about ten years.


“Ten years of you and LEDs” (TV commercial)


“Grand Central” (TV commercial) (newspaper advertisement)

### Excellent ECP Special Website

A special website to introduce the enthusiasm for the development of our FY2012 and FY2013 Excellent ECPs has been opened, a tie-up advertising project with Nikkei Business Publications, Inc.


ecomom special website (in Japanese only)
(A new window will open.)

# Exhibitions

We take an active part in presenting our products and technologies at various exhibitions around the world in order to have our environmental initiatives understood by as many people as possible.


Eco-Products 2013 (Japan)

## FY2014

| | | |
|---|---|---|
| Aug. 2014 | 23rd Toshiba Group Environmental Exhibition | Toshiba head office, Tokyo |

## FY2013

| | | |
|---|---|---|
| Jan. 2014 | 2014 International CES | United States |
| Dec. 2013 | Eco-Products 2013 | Tokyo Big Sight, Japan |
| Nov. 2013 | Smart Mobility City 2013 | Japan |
| Oct. 2013 | CEATEC Japan 2013 | Japan |
| Sep. 2013 | IFA 2013 | Germany |
| Apr. 2013 | WETEX2013 | UAE |

# Global Activities

## Partnerships

### Donation of photovoltaic power generation panels to a mega solar project at Fukushima Airport

In order to support Fukushima Prefecture's project to generate electricity using renewable energy, Toshiba donated 500 kW's worth of photovoltaic power generation panels and power conditioning systems to Fukushima Airport Solar Power Project, which is implementing a mega solar project in the Fukushima Airport premises.

The Fukushima prefectural government has positioned this project as a core facility for promoting renewable energy power generation projects and a symbol of its initiatives to recover from the Great East Japan Earthquake. Using available spaces at Fukushima Airport, which extends through Sukagawa City and Tamagawa Village, the system generates 1.2 MW of electricity, which is equivalent to the amount consumed by 330 households.

Fukushima Airport mega solar system

### Installation of LED lights in the Louvre Museum

In the lighting improvement project Toshiba began implementing with France's Louvre Museum in 2010, the company completed the replacement of lights with LED lamps for major paintings in the galleries.

For the lighting system for Leonardo da Vinci's Mona Lisa, Toshiba employed a lighting method which allowed all shades of color in the masterpiece to be faithfully reproduced. In order to prevent the painting from appearing brownish, the lighting system also minimizes the amount of ultraviolet rays and blue light, enabling viewers to feel the excitement that would have been experienced at the time the painting was completed. The ceiling lights for the Red Room that houses Jacques-Louis David's *The Consecration of the Emperor Napoleon I and the Coronation of Empress Josephine* use the new DALI control power source, which maintains the lighting for the painting at a certain level so that visitors can appreciate the work at a fixed level of illumination. This has allowed power consumption to be reduced by about 60%, helping the museum maintain its environmental consciousness.

As part of this project, after signing a partnership agreement, the lights for the Pyramid, Pyramidion, and the Napoleon Court were gradually replaced with LED lights; through these efforts, the Louvre has reduced power consumption by about 73%. Additionally, plans call for the lighting for the Napoleon Hall below the Pyramid and the square Carre Court, the original center of the museum site, to be replaced with LED lights by the middle of FY2015.

Mona Lisa

The Red Room

### Involvement in environmental campaigns

Toshiba Group companies in various countries around the world again participated in Earth Hour 2014, an event hosted by the World Wide Fund for Nature that calls for people to make a global effort to turn off lights at the same time. On March 29, the day of the event, Toshiba put out the lights for signboards and other facilities in major cities worldwide, including Sendai, Yokohama, Osaka, New York, Paris, London, Beijing, Shanghai, Hong Kong, Chongqing, Bangkok, Jakarta, Hanoi, Ho Chi Minh, Manila, Dubai, and Jeddah. In addition, many business and production sites cooperated in this energy conservation campaign by actively turning off the lights at their facilities.

Toshiba has participated in this event every year since officially announcing participation in Japan in 2010.

New York, United States
“TIMES SQUARE TOSHIBA VISION”
(Before and after lights out)


Jakarta, Indonesia
(Before and after lights out)


Shanghai, China
(Before and after lights out)

### Co-sponsoring the TOMODACHI Initiative

In FY2014, to support the TOMODACHI Initiative organized by the United States government and the U.S.-Japan Council (President: Irene Hirano Inouye), Toshiba started co-sponsoring the initiative as a strategic partner.

The TOMODACHI Initiative aims to promote communication among young people by inviting Japanese and American high school students to Japan every August to provide them with the opportunity to discuss how to solve various social issues facing the world.

In FY2014, the first year of the initiative, we provide students with an opportunity to think about social issues through an experiential program with a view to realizing a smart community and creating a sustainable society. Through this initiative, Toshiba will support efforts to cultivate young leaders who aim to contribute to the mutual development of Japan and the United States.


▲ To Top

## NPOs and NGOs

### Holding stakeholder dialogues periodically

Toshiba Group periodically holds stakeholder dialogues in order to make effective use of stakeholders' opinions and requests for social and environmental management. In the February 2014 dialogue, senior managers of Toshiba Information Equipment (Philippines), Inc. received valuable opinions from an Asia-Pacific representative of Business for Social Responsibility (BSR), a U.S. CSR promotion organization, about subjects such as global environmental conservation and other community activities as well as supply chains and other CSR-related issues. In the future, we will continue to hold dialogues with stakeholders in order to reflect results of such dialogues in our future CSR activities.

### Stakeholder dialogue with a U.S. CSR promotion organization

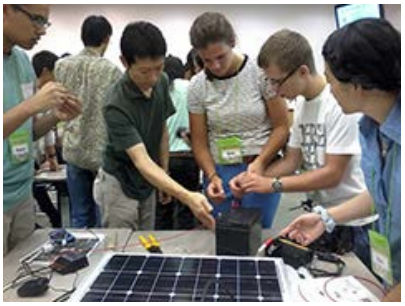
Date: February 2014
Venue: Toshiba Information Equipment (Philippines), Inc. (Manila, the Philippines)
Theme:

- Overall CSR activities in various locations

## Toshiba Youth Conference

In August 2013, the “TOSHIBA YOUTH CONFERENCE FOR A SUSTAINABLE FUTURE 2013” summer camp was held over an eight-day period. High school students and teachers who visited Tokyo from the United States, Thailand, Poland, and Japan participated in this sixth summer camp. Under the theme “Achieving Harmony with the Earth,” participants gained a deep understanding of global environmental problems through lectures, field observation, and discussions.


Group photo taken at a ceremony



Heated group discussion

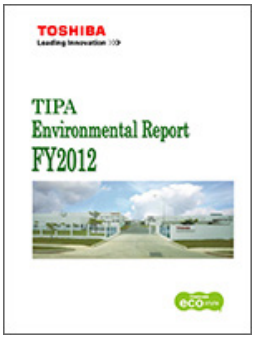
# Local communities

## Publication of site reports

In order to present an overview of business activities at our production sites around the world and to have our environmental initiatives understood by local community residents, we disclose environmental information for each of our production sites.

We summarized major environmental initiatives in FY2013 and presented digest reports on about 117 sites on our websites. At the same time, some of our production sites publish their own reports and present their information on the website. Copies of these reports are also distributed to visitors to our factories.

Digest report of a production site




Environmental report of a production site

## Development of Women Iki³ Activities

At Toshiba Corporation's Oita Operations, the Oita Operations Angel Unit, a group of women who wish to enliven the plant, engages in various activities with the support of local residents and many employees by making the most of their unique sensibilities. Its FY2013 environmental initiatives, dubbed "Women Iki3 Activities," included introducing animals and plants that live and grow around the plant; hosting nature observation meetings and holding classes at elementary schools on demand; and creating green curtains and patrolling the plant for energy conservation.



## Hosting the Eighth Environmental Forum in Fuchu City

Toshiba Solutions Group is deepening its exchange with the citizens of Fuchu by participating in environmental events held in the city each year. In 2013, the eighth year, Toshiba Solutions hosted an environmental forum on December 3 with the help of the city government and the Fuchu City Environment Conservation Activity Center. On the day of the event, Mr. Ken Nakamoto, an actor, gave a lecture to an audience of about 550 under the title, “The Amazing Tama River: Nature Close at Hand and the Waterfront Environment.“ Based on his own experience of observing nature along the river, he explained about the surprising aspects of the lives of animals, including fish and wild birds, in an easy-to-understand manner while presenting diverse images of animals he had observed. This forum thus allowed participants to think about the environment together.

## Earth Day cleaning campaign

On Earth Day 2013, the Milwaukee Service Center of Toshiba International Corporation in the United States worked with the Wisconsin Department of Natural Resources to clean the portion of the Hank Aaron State Trail for which it was responsible as a local leader. Some 140 people participated in the cleaning campaign, including employees as well as local residents and high school and university students, collecting about 15.3 kiloliters of garbage.

## Shareholders and investors

### Publication of the Annual and CSR Reports

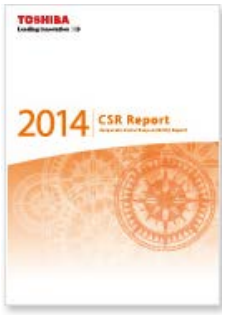
Toshiba Group discloses financial information in the Annual Report and information on CSR (social and environmental) initiatives in the CSR Report. The information in these reports is also disclosed on the website.

**● Annual Report/Investor relations website**


http://www.toshiba.co.jp/about/ir/en/finance/ar/index.htm


http://www.toshiba.co.jp/about/ir/index.htm

**● CSR Report/CSR website**




http://www.toshiba.co.jp/csr/en/report/download.htm


http://www.toshiba.co.jp/csr/en/index.htm

## Suppliers

### Sharing information with suppliers mainly through briefings

Toshiba Group has established the Green Procurement Guidelines to procure products, parts, and materials with less environmental impacts from suppliers that actively promote environmental initiatives.

The Group has also produced copies of “Toshiba Group Procurement Policy” and “Supplier Expectations” (which summarize the Group's procurement policy and CSR/environmental requirements), distributed these to suppliers all over the world, and ensured that suppliers are fully aware of the requirements. In addition, meetings are held to explain the Green Procurement Guidelines to suppliers, and surveys of suppliers' procurement policies (including self-checks) are conducted. In FY2013, Toshiba's procurement managers visited a total of about 1,100 suppliers to carry out on-site surveys. When we find a problem with a supplier, we provide guidance and support. If necessary, we take measures such as suspension of transactions with the supplier.

**Number of suppliers who participated in environmental briefings and number of suppliers surveyed (Toshiba Group)**

| | |
|---|---|
| Participation in briefings | 3,404 companies / 25,594 companies |
| No. of suppliers surveyed | 3,975 companies / 37,284 companies |
| No. of on-site surveys | 679 companies / 5,759 companies<br>(FY2013/cumulative numbers for Toshiba Group during the seven years from FY2007 to FY2013) |

## External organizations and administrative agencies

### Involvement in international standardization initiatives

In order to contribute to the development of global frameworks to realize a sustainable society, Toshiba Group actively participates in and cooperates with international institutions, administrative agencies, and industry organizations such as the International Organization for Standardization (ISO), International Electrotechnical Commission (IEC), World Business Council for Sustainable Development (WBCSD), Electronic Industry Citizenship Coalition (EICC), and United Nations Global Compact.

ISO/TC207 General Meeting in Panama

Toward the realization of a sustainable society, in 2010 Toshiba Chairman Atsutoshi Nishida served as a member of the Executive Committee of WBCSD, an organization led by the CEOs of some 200 global corporations; he has served as one of its Vice Chairmen since 2012. With the aim of contributing to the realization of a sustainable society, Toshiba is acting globally as a core member of the “Electrifying Cities toward Zero Emissions” initiative, a business solution in WBCSD's Climate & Energy focus area and Action2020 action platform, as well as serving as a member of the ISO Smart Community Infrastructure Work Stream.

In addition, two Toshiba experts have joined ISO/TC207/SC5 on life cycle assessment (LCA) to develop international standards for water footprints , LCA methods for organizations, and so forth. They participated in the plenary meeting of ISO/TC207 held in Panama in May 2014 as representatives of Japan. As shown by their activities, they are working to establish practical LCA methods by making the most of the knowledge they have acquired through the introduction of LCA at Toshiba for 20 years.

Furthermore, as an advisory member, another Toshiba expert has participated in IEC/TC111/WG3 on the product's level of environmental consciousness since the working group was formed in 2005. As a project leader, the personnel is working to develop international standards for test methods for specified chemical substances that comply with the RoHS directive . At a meeting in the United States in June 2014, for instance, the personnel played an active role in establishing test methods to enhance overall industry competitiveness mainly by making the most of the knowledge of RoHS analysis technology the personnel acquired at Toshiba.

# Evaluations

## Evaluation of products and technologies

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| 10th Eco-Products Awards | Minister of Economy, Trade and Industry's Award (Eco Product Category) | SPACEL-GR & ELCRUISE energy-saving, environmentally conscious, and earthquake-resistant elevators | Toshiba Elevator and Building Systems Corp. |
| | Minister of Economy, Trade and Industry's Award (Eco Service Category) | Next-generation lighting control system making effective use of a visual motion-sensor | Toshiba Lighting & Technology Corp. and Toshiba Corp. |
| FY2013 Minister of the Environment's Award for Activities to Mitigate Global Warming | | Development and commercialization of energy-saving, environmentally conscious, and earthquake-resistant elevators | Toshiba Elevator and Building Systems Corp. |
| | | Development of Universal Smart X RUA-SP Series air-cooled heat pump-type module heat source machine | Toshiba Carrier Corp. |
| 2013 Grand Prize for Excellence in Energy Efficiency and Conservation, Product and Business Model Category, the Chairman of the Energy Conservation Center Japan's Prize | | ZABOON drum-type washer-dryer | Toshiba Home Appliances Corp. |
| Green IT Award 2013 (Energy Conservation through the Use of IT Category)<br>The METI Minister Award | | Loops paper reuse system | Toshiba Tec Corp. |
| Green IT Award 2013<br>Savings in IT-related Energy Consumption Category<br>The Commerce and Information Policy Bureau Director-General Award” | | Total storage innovation addressing trends in big data Enterprise SSDs and HDDs | Toshiba Corp. |
| “Cho” Monozukuri Innovative Parts and Components Award 2013<br>Parts and Components Grand Award (Top Prize) | | Erasable Loops toner and low-temperature fuser assembly | Toshiba Tec Corp. |
| 10th LCA Society of Japan Award | | Special award to commemorate the 10th anniversary | Toshiba Corp. |
| 69th IEEJ Technical Development Award | | Development of an LSI system to minimize standby power consumption | Toshiyuki Umeda and Hiroaki Ishida, Corporate Research & Development Center, Toshiba Corp.<br>Shigeyasu Iwata, Digital Products & Services Company, Toshiba Corp. |
| Kawasaki Mechanism Certification System | | G3A-b 145-kV gas-insulated switchgear (GIS) | Hamakawasaki Operations, Toshiba Corp. |
| | | Phased array weather radar and EY-5000 ticket issuing machine | Komukai Complex, Toshiba Corp. |
| City of Kawasaki's Low $CO_2$ Kawasaki Brand 2013 | | Solid-state MP radar and EY-5000 ticket issuing machine | Komukai Complex, Toshiba Corp. |
| Low-carbon Excellence Award for Environmental Protection | | e-STUDIO456 | Toshiba TEC Information Systems (Shenzhen) Co., Ltd. |

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| Excellence Award for Energy Equipment<br>Chairman of the Japan Machinery Federation's Award | | SFS-322HP business-use heat pump washer-dryer | Toshiba Corp. (shared with Tosei Corp. and The Kansai Electric Power Co. Inc.) |
| Environmentally Friendly Innovation Award | | ECO-MFP e-STUDIO306LP/RD30 | Toshiba TEC Italia Imaging Systems S.p.A |
| EcoDesign 2013 Best Paper Award | | An Index of the Impact of Mining on Biodiversity for Sustainable Manufacturing | Hideki Kobayashi, Corporate Research & Development Center, Toshiba Corp. |
| 55th Ten Best New Products Awards, Monozukuri Award | | VSG28 energy-saving inverter-run power generator | Toshiba Industrial Products and Systems Corp.<br>Toshiba Machine Co., Ltd.<br>(Shared with Hokuetsu Industries Co., Ltd.) |
| 2014 AHR EXPO Innovation Award “Honorable Mention” | | SMMS-i Series cooling-heating flexible air conditioning systems | Toshiba Carrier Corp. |
| FY2013 (62nd) Awards for Engineers Who Have Made Distinguished Contributions in the Electric Industry | Encouragement Award | Development and commercialization of a microcomputer based on vector control technology which makes it easy for air conditioning systems to conserve energy (home appliance category) | Yukihisa Hasegawa, Corporate Manufacturing Engineering Center, Toshiba Corp. |
| | | Development of a low-voltage power generator and motor varnish with a low level of environmental impact (heavy industry category) | Hikaru Miyazaki, Nishishiba Electric Co., Ltd. |

## Evaluation of business activities

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| Awarding of Reduce, Reuse, Recycle Promotion Manager | Chairman's Award | Manufacturing of resource-recycling NAND flash memory | Yokkaichi Operations, Toshiba Corp. |
| | | Effective use of waste liquid and thorough 3R campaign for all employees | Oita Operations, Semiconductor & Storage Products Company, Toshiba Corp. |
| | | Reduction of total waste volume, improvements for zero emissions by waste recycling, and implementation of educational campaigns | Himeji Operations, Semiconductor & Storage Products Company, Toshiba Corp. |
| 2013 Grand Prize for Excellence in Energy Efficiency and Conservation (Example in the Energy Conservation Category), Chairman of the Energy Conservation Center Japan's Prize | | Reduction of fuel consumption through further initiatives for waste heat collection | Iwate Toshiba Electronics Co., Ltd. |
| ASEAN Award for Best Practices in Energy Management for Industries and Buildings | | Overall energy conservation efforts (such as technologies and systems) | Toshiba Information Equipment (Philippines), Inc. |
| ASEAN Corporate Sustainability Council: Energy Management Award | | Overall energy conservation efforts (such as technologies and systems) | Toshiba Information Equipment (Philippines), Inc. |
| Encouragement Award (Contribution to Energy Conservation), Kawasaki City's Second Smart Lifestyle Grand Prize | | Electricity conservation campaign through the introduction of electric weather forecast monitors | Hamakawasaki Operations, Toshiba Corp. |

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| Encouragement Award (3R Promotion), Kawasaki City's Second Smart Lifestyle Grand Prize | Contribution to the mitigation of global warming mainly by organizing reuse exhibitions | Komukai Complex, Toshiba Corp. |
| FY2013 Fukushima Protocol Award (Office Category) | Contribution to the mitigation of global warming through $CO_2$ emissions reduction campaigns at business sites | Toshiba Alpine Automotive Technology Corp. |
| Merit Award in the Singapore Packaging Agreement 3R Packaging Awards 2013 | Overall efforts to reduce the number of containers and amount of packaging | Toshiba TEC Singapore Pte. Ltd. |
| FY2013 Ome City's Green Curtain Contest | Top prize in the organizations category | Ome Complex, Toshiba Corp. |
| Acquisition of Kunshan City's corporate environmental green level (chosen as one of Kunshan city's top ten foreign companies investing in green development) | Environmental conservation activities | Toshiba Lighting (Kunshan) Co., Ltd. |
| FY2013 Kansai Eco-Office Encouragement Award | Environmentally conscious activities, such as those for energy conservation | Himeji Operations, Semiconductor & Storage Products Company, Toshiba Corp. |
| Don Emilio Abello Outstanding Energy Efficiency Award | Promotion of energy conservation in both technologies and systems | Toshiba Information Equipment (Philippines), Inc. |
| Mother Nature Award | Initiatives for biodiversity and management of waste upon discharge (such as technologies and local communication) | Toshiba Information Equipment (Philippines), Inc. |
| Silver Rating Award from the Laguna Lake Development Authority | Management of the quality of wastewater discharged into Lake Laguna, supporting technologies, local communication, etc. | Toshiba Information Equipment (Philippines), Inc. |
| Outstanding Pollution Control Officer Award from the Laguna Lake Development Authority | Official commendation of personnel responsible for management of the quality of wastewater discharged into Lake Laguna (including technologies and local communication) | Toshiba Information Equipment (Philippines), Inc. |
| Green Industry Certification (Level 3, Green Systems) | Promotion of environmental management | Toshiba Semiconductor (Thailand) Co., Ltd. |
| Second Mie Environmental Grand Prize (Environmental Management Category) | Promotion of environmental management | Yokkaichi Operations, Toshiba Corp. |
| Awarding of Excellent Energy Conservation Promotion Manager recognized by the Director-General of the Energy Conservation Center, Japan Tokai Branch | Promotion of energy conservation | Two employees from Yokkaichi Operations, Toshiba Corp. |
| Zero Garbage Oita Campaign Manager Award (Governor's Award) | Contribution to keeping Oita Prefecture beautiful and comfortable through the spread of 3R campaigns | Oita Operations, Semiconductor & Storage Products Company, Toshiba Corp. |

## Evaluation of communication programs

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| 42nd Fuji Sankei Group Advertising Award<br>Media Mix Category, Excellence Award | Toshiba LED lighting at the Louvre Museum | Toshiba Corp. |
| 33rd Newspaper Advertising Prize<br>Advertiser Category, Newspaper Ad Award | World heritage sites illuminated by Toshiba LED lamps | Toshiba Corp. |
| 62nd Nikkei Advertising Award<br>Corporate Brand Advertising Award, Grand Prize | Toshiba LED lighting at the Louvre Museum | Toshiba Corp. |
| 17th Environmental Communication Awards<br>Environmental Report Category, Excellence Award | Toshiba Group Environmental Report 2013 | Toshiba Corp. |

## Evaluation by the mass media and SRI

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| 17th Nikkei Environmental Management Level Survey | First place (manufacturing) | Toshiba Corp. |
| CDP Japan 500 Climate Change Report 2013 | Information disclosure score: 98 points (third among Japanese companies) Performance score: A rating | Toshiba Corp. |

**Committed to People, Committed to the Future.**


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Inquiry page on Toshiba website
**URL : http://www.toshiba.co.jp/env/en/contact/**


The report is available on the Toshiba website.
**URL : http://www.toshiba.co.jp/env/en/**

Toshiba is conducting an online questionnaire. Please give us your opinions or comments on the report for future reference.

**URL : https://www.webcom.toshiba.co.jp/csr/env.php**


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