Environment

We are undertaking a variety of initiatives to contribute further to environmental conservation through our business operations and social contribution activities.

Material Issue 3 **Initiatives to Conserve the Global Environment**

In accordance with the KDDI Environmental Charter, we are working to realize a low-carbon, recycling-oriented society and achieve biodiversity. To these ends, KDDI is moving steadily forward with a variety of initiatives, centering on "Green of ICT" (reducing the environmental impact of ICT equipment), "Green by ICT" (reducing the environmental impact of society through the use of ICT), and the "Green Road Project" (environmental preservation activities in cooperation with customers and employees).

Environmental Management

KDDI Environmental Charter

Manifesto

The KDDI Group recognizes the importance of fulfilling its duty as a responsible global corporate citizen to conserve and protect the Earth's irreplaceable environment so that it can be inherited by future generations. We are committed to pursuing our business in eco-conscious ways, through programs of activities that span the entire company.

Environmental Management Structure

The KDDI Group has formed the KDDI CSR & Environment Committee, comprising members from each division, branch, Group company, and related organization. This committee serves as the center for formulating KDDI's environmental management system and promoting efficient environmental preservation activities throughout the Group. KDDI has acquired international ISO14001 certification for this management system, which covered KDDI and 22 Group companies as the end of FY2012 (targeting 191 sites and about 46,200 people).

Internal Environmental Audits

KDDI conducts internal environmental audits once each year. In these audits, each department is provided with a checklist and asked to evaluate itself, and internal environmental auditors perform a second check on the state of conformity with environmental legislation. In addition, these audits confirm the results of environmental activities and verify the functioning of the system for ongoing improvements.

Appropriate Processing of PCB

KDDI ensures that transistors, capacitors, and other components that previously included high-concentration polychlorinated biphenyls (PCB) are disposed of properly in accordance with legislation and the Company's internal processing regulations. We disposed of approximately 17 tons of high-concentration PCB in FY2012, and plan to complete this processing in FY2013.

Third Medium-term Environmental Conservation Plan Progress under the "KDDI GREEN PLAN 2012–2016"

The Third Medium-term Environmental Conservation Plan, which we formulated in FY2012, introduces 3 priority issues to be achieved by FY2016—a low-carbon society, a recycling-oriented society, and biodiversity—and sets specific targets for each. As of March 31, 2013, we had made progress toward each of our goals except achieving zero emissions*1. Although we did not meet our target of a final processing ratio of 1.5% for retired telecommunications facilities, we will continue collaborating with outsourced companies toward this goal.

Meanwhile, we reached our goal of increasing the number of Tribrid Base Stations*2 to 100 by the end of FY2012. We will persevere in using renewable energy to reduce electricity consumption.

*1 "Zero emissions" is defined as a final processing ratio of 1% or less.
*2 These au mobile phone base stations automatically select from 3 kinds of electric power—power generated by solar panels, power saved in charged storage batteries, and power supplied by power companies—and provide power to base stations in the most efficient way at the time it is used.

KDDI GREEN PLAN 2012-2016

Material Issues	Targets
Low-Carbon Society	(1) By FY2016, reduce electric power consumption by 30%, compared with the level if energy-saving measures had not been implemented.
	(2) By FY2016, lower electric power consumption per subscriber by 15%, compared with FY2011.
	(3) By the end of FY2012, increase the number of Tribrid Base Stations to 100.
Recycling-Oriented Society	(1) Achieve zero emissions for retired telecommunications facilities.
	(2) Achieve material recycling ratio of 99.8% or more for used mobile phone handsets.
	(3) Achieve a material recycling ratio for general waste of 90% or more at KDDI-owned buildings and in the headquarters building.
Biodiversity	(1) Pursue activities based on our action guidelines for preservation of biodiversity.

Environmental Impact of Business Activities

Of KDDI's business activities, environmental impact is the highest in terms of the CO_2 emitted through the use of electricity in electrical telecommunications facilities and in the industrial waste generated during equipment upgrades. We are working to quantify and reduce these environmental impacts. We also see the recycling of used mobile phone handsets as a priority.

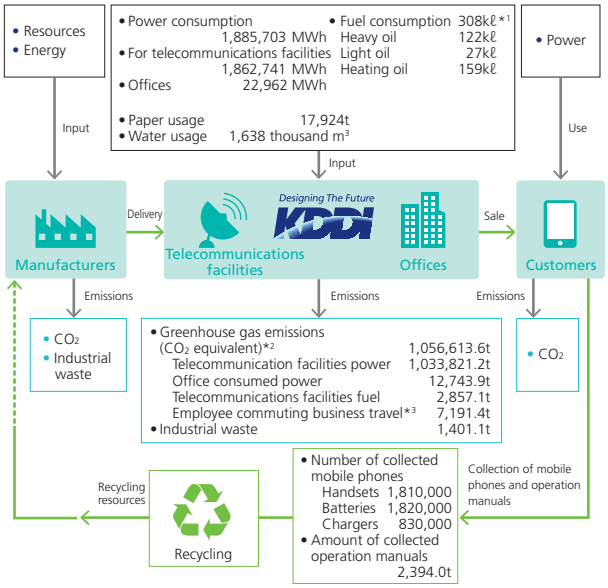
In FY2012, we confirmed the use of blown asbestos in one base station and completed its removal.

Environmental Accounting

Noteworthy changes in parameters of environmental accounting during FY2012, were fourfold: (1) the expansion of the scope of calculation and the addition of 3 consolidated subsidiaries (WebMoney Corporation, KDDI MATOMETE OFFICE CORPORATION, and Okinawa Cellular Telephone Company), (2) the cessation of dual operation at some base stations due to the conclusion of bandwidth reorganization, which reduced the amount of electricity consumed (MWh) compared with the preceding fiscal year, (3) the sale for items that had previously been considered industrial waste, thereby reducing industrial waste, communications facilities, and industrial waste related to construction (t) compared with the previous year, and (4) the reduction in paper resources used compared with the preceding fiscal year.

Environmental Impact of FY2012 Business Activities

Coverage: KDDI (KDDI non consolidated)



*1 Crude oil equivalent. Used for air conditioning of telecommunications facilities and for emergency generators.

*2 CO_2 emissions are calculated using a conversion coefficient of 0.555 kg-CO_2/kWh for the power consumption and the emission coefficients for fuel consumption applied to the calculation, reporting, and disclosure systems based on the "Act on Promotion of Global Warming Countermeasures."

*3 CO_2 emissions are calculated using emission factors indicated in the Ministry of the Environment's "Overview of Basic Conversion Guidelines Related to the Calculation of the Greenhouse Effect through the Supply Chain."

Coverage: KDDI and 13 major consolidated subsidiaries* Period: April 1, 2012 to March 31, 2013

Environmental Protection Costs		Transaction Examples	FY2012 (Millions of Yen)		FY2011 (Millions of Yen)		Change from Previous Year (Millions of Yen)	
			Investment	Cost	Investment	Cost	Investment	Cost
Business area costs	Pollution prevention costs	Pollution prevention costs stipulated by law, costs for proper disposal of PCBs, etc.	0	141	0	104	0	38
	Global environmental protection costs	Power-saving wireless equipment for mobile base stations (Investment amount is calculated proportionally based on the power-saving effect.)	7,319	5,174	24,718	2,595	(17,399)	2,579
	Resource recycling costs	Reduction of paper resources, processing and disposal of waste products	0	378	71	423	(71)	(45)
Upstream/downstream costs		Collection, recycling, and reuse of merchandise and products	0	636	0	417	0	219
Administrative costs		Operation and updating of environmental ISO standards, disclosure of environmental information	1	96	0	281	1	(185)
R&D costs		R&D of technology, equipment, handsets, products, services, and other items conducive to reducing the environmental burden	0	130	0	144	0	(13)
Social activity costs		Donations and support for forest conservation activities and to environmental protection groups	0	16	0	32	0	(16)
Environmental damage restoration costs		Measures for prevention of asbestos spraying, restoration of polluted soil	0	0	0	38	0	(38)
Total			7,320	6,572	24,789	4,033	(17,469)	2,539

1. Environmental Protection Benefits (Physical)		Indicator Category (Unit)	FY2012	FY2011	Change from Previous Year
(1) Benefits derived from business area	1) Benefits related to resources invested in business activities	Power consumption (MWh)	2,038,462	2,315,672	(277,210)
		Paper usage (t)	17,991	19,898	(1,907)
		Paper reduced by Bill on WEB (t)	3,339	3,244	95
	2) Benefits related to environmental burden and waste products discharged from business activities	Greenhouse gas emissions (t-CO_2)	1,035,576	971,201	64,375
		Industrial waste emissions related to telecommunications facilities and buildings (t)	2,041	4,209	(2,168)
(2) Benefits derived from upstream/down-stream costs	Benefits related to goods and services produced by business activities	Number of used mobile phones and other devices collected (10,000 units)	446	533	(87)

2. Economic Benefits of Environmental Protection Measures (Yen)	Substantive Benefits (Major Effects)	FY2012 (Millions of yen)	FY2011 (Millions of yen)	Change from Previous Year
Revenues	Revenues from sales through disposal of telecommunications facilities and buildings	502	235	267
Costs reductions	Reduction in energy costs by adopting the use of low-pollution vehicles	12	10	1
	Reduction in costs of new purchases by reusing disposed of telecommunications facilities	2,136	1,748	388
Total		2,650	1,993	656

* KDDI Web Communications Inc., mediba Inc., JAPAN CABLENET LIMITED (JCN), KDDI R&D Laboratories Inc., KDDI Technology Corporation (KTEC), KDDI Research Institute, Inc. KDDI Engineering Corporation, KDDI Evolva Okinawa Corporation, KDDI Challenged Corporation, TELEHOUSE International Corp. of Europe Ltd. (London), WebMoney Corporation, KDDI MATOMETE OFFICE CORPORATION, OKINAWA CELLULAR TELEPHONE COMPANY

Low-carbon Society

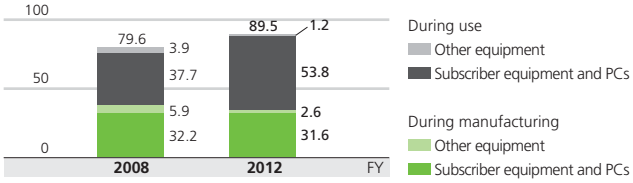
LCA Initiatives Green of ICT

To quantify and disclose environmental impact, KDDI conducts life-cycle assessments (LCA) of its products and services to determine the amount of CO_2 generated at each stage of operations—from manufacturing and use to disposal or recycling*1.

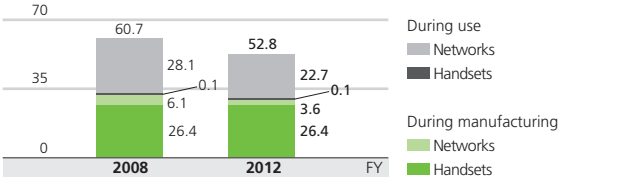
As in FY2008, in FY2012 we conducted LCA on "au HIKARI" and "au." CO_2 emissions per "au HIKARI" subscriber were up 12.4% compared with FY2008 levels, owing to factors such as the increased electricity consumed during use as HGW*2 performance rose from 100Mbps to 1Gbps. CO_2 emissions per "au" subscriber declined 13.0% from FY2008, stemming from the large-scale introduction of "Type VII" compact energy-saving wireless equipment. KDDI plans to continue its efforts to determine and disclose the environmental impact of its products and services as part of its initiatives toward achieving a low-carbon society.

*1 Environmental impact at the disposal and recycling stage includes environmental impact at the manufacturing stage.
*2 Home GateWay (HGW): In fixed-line communications services, a device that connects public networks to in-home networks.

Environmental Impact of "au HIKARI"
(Compared with FY2008)
Environmental impact (kg-CO_2/year per subscriber)



Environmental Impact of "au"
(Compared with FY2008)
Environmental impact (kg-CO_2/year per subscriber)



KDDI TeleOffice Green by ICT

KDDI provides a visual communications service, "KDDI TeleOffice," that enables the sharing of video camera footage, as well as documents, photographs, and other images and materials, via PC, tablets (multifunction portable terminals), and smartphones. The service can also be used like a whiteboard.

A step beyond conventional webconferencing, the "KDDI TeleOffice" service employs an ID system so that participants can use their tablets to participate freely at any time. The service has various potential applications, including for remote and paperless meetings. In addition to boosting business efficiency for corporate customers, the service should decrease the CO_2 emissions resulting from employee movement and encourage paperless communications, thereby reducing the environmental impact of society.

Portable Batteries Green of ICT

In the past, KDDI has used mobile power supply vehicles to power mobile phone base stations during electricity outages. However, we have recently begun conducting trials to determine the commercial viability of portable batteries in reducing environmental impact.

In FY2012, we conducted a trial in the Osaka area, assuming a power outage of approximately 10 hours per base station and wireless device power consumption of 1kW. To supply this power for a single base station, a mobile power supply vehicle would consume 8.2 liters of light oil (equivalent to 21.5kg of CO_2 emissions), whereas a portable battery would require 10kWh (equivalent to 4.1kg of CO_2 emissions). Given this 17.4kg difference in CO_2 emissions, we estimated that portable batteries would reduce emissions by approximately 80%. KDDI plans to continue such trials to verify the commercial viability of portable batteries.

Trial of the "Eco-Bito" Service to Assist Customers' Efforts to Save Electricity Green Road Project

KDDI and Sumitomo Corporation are considering the commercialization of "Eco-Bito," a lifestyle support service that provides customers with advice on the best ways to conserve electricity through their lifestyles, based on a variety of information that also includes a customer's family makeup, home location, and household electrical appliances used. As part of this process, we provided the "Eco-Bito Trial" service free of charge between July 2012 and February 2013.

For "Eco-Bito Trial," we installed high-precision watt-hour sensors in subscribers' homes. Based on prerecorded customer information, we used these sensors to make visible the amount of electricity used at home by PC and smartphones, as well as solar power generation volume. We then provided customers with detailed information on optimal electricity conservation behavior, based on their usage, location, and weather information. The service recommends what household appliances to purchase as children grow up and other lifestyle ideas for how customers can conserve energy.

By verifying the trial, KDDI and Sumitomo Corporation are making inroads into providing services that encourage energy-saving lifestyles to their customers.

Recycling-oriented Society

Reuse and Recycling of Telecommunications Facilities Green of ICT

KDDI promotes reuse activities that effectively employ retired telecommunication facilities. We also use material recycling to effectively employ equipment, components, and materials that have become unnecessary.

Owing to the migration of au mobile phones to a new 800MHz frequency, in FY2012 we began retiring base stations using the former 800MHz band. When retiring this equipment, we employed material recycling to make effective use of resources.

Former 800MHz frequency base station battery (storage battery)

Former 800MHz frequency base station power source

Paper Reduction and Recycling Green by ICT

Operation manuals for au mobile phones can be thick, as they need to explain a host of services and functions, but we have begun to make these slimmer with the introduction of an operation manual application for smartphones. We are also making packaging on au mobile phones more compact.

Slimmed-down operation manual (right)

To effectively reuse the high-quality paper employed in operation manuals, au shops recover the manuals that come with au mobile phones, as well as various circulars, reusing KDDI printed matter as recycled paper.

TOPICS

Making Use of Materials from Thinning

Bus shelter made from thinned materials

Our operation manual recycling activities seek to support forest conservation, such as by contributing the funds received when delivering used paper to a collection facility to tree-thinning efforts. As part of our activities to support reconstruction following the Great East Japan Earthquake, in FY2012 we worked with the Kamaishi Regional Forestry Association, Iwate Prefecture, to build 5 bus shelters and 18 benches from materials thinned around Kamaishi and contribute them to the city. We are contributing to forestry in the Tohoku region and supporting disaster-affected economies in ways such as offering mobile phone stands made from materials from tree thinning at a factory in the town of Minamisanriku, Miyagi Prefecture, and distributing 2013 desktop calendars made from recycled KDDI paper.

Promoting Recycling of Mobile Phones

Green Road Project

DATA Recycling ratio in FY2012

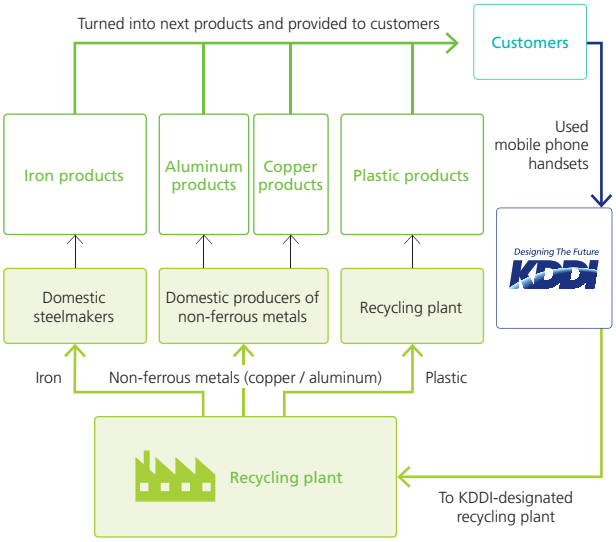
99.8%

Mobile phones use gold, silver, copper, palladium, and other precious metals and rare earths. To prevent depletion of the Earth's resources, we emphasize the role of recycled metal, plastic, and other resources. KDDI is an active proponent of "material recycling," which involves the reuse of recyclable materials.

At au shops, we manually disassemble used mobile phone handsets that have been collected from customers unit by unit, separating out substrates, displays, cameras, plastics, screws, iron, antennas, motors, speakers, and other items. The substrates are sent to refining companies to extract gold, silver, copper, palladium, and other resources; screws and antennas are dispatched to iron and steel manufacturers for use in steel products; and plastics are recycled into clothes hangers and other items.

When a machine is used to disassemble a mobile phone, substrates and LCD, plastics, and other components are shredded, so incineration processing is required to recover precious metals. Also, during incineration 20–30% of the plastic is burned up and so cannot be used as a recycled resource. KDDI disassembles phones manually to prevent recyclable resources from being wasted. During FY2012, our recycling ratio was nearly unity, at 99.8%.

Basic Flow for Recycling of Mobile Phones



Biodiversity

KDDI Group Environmental Preservation Activities throughout Japan

DATA Environmental preservation activities conducted in FY2012

12 locations

DATA Number of employees participating in environmental preservation activities in FY2012

383 people

We have formulated the KDDI Action Guidelines on the Preservation of Biodiversity. In line with these principles, we take opportunities to preserve biodiversity in a host of ways.

Environmental Preservation Activities in FY2012

Location	Activity
Miyagi Prefecture	Kesennuma Camellia Walk
Miyagi Prefecture	Kajika Forest Conservation Volunteers
Miyagi Prefecture	Miyagi Prefecture Fishing Harbor Kesennuma Karakuwa Reconstruction Support Volunteers
Miyagi Prefecture	Cleanup Hirose River
Yamanashi Prefecture	Mt. Fuji Deer Feeding Damage Countermeasure Volunteers
Nagano Prefecture	Operation Manuals Recycling Forest (Nagano) Volunteers
Ishikawa Prefecture	Kanazawa Asano River Cleanup
Kyoto Prefecture	Tennozan Forest Conservation Volunteers
Hiroshima Prefecture	Hiroshima Forest Creation Forum Volunteers
Kagawa Prefecture	Mt. Onose Forestation Volunteers
Tokushima Prefecture	Hiwasa-Ohama Beach Cleanup
Fukuoka Prefecture	Patchwork Forest Creation

Forest Protection Efforts

KDDI Group employee volunteers and their families participated in the Mt. Fuji Deer Feeding Damage Countermeasure Volunteers activity sponsored by the Organization for Industrial, Spiritual and Cultural Advancement–International in the village of Narusawa, Minamitsuru, Yamanashi Prefecture.

Young trees planted as part of a forest regeneration project on Mt. Fuji between 2008 and 2010 are suffering from feeding damage due to the proliferation of wild deer in the area. To protect these young trees, the volunteers erected nets around 255 trees planted in a 0.3-hectare area.

Nets to protect trees from feeding damage

Land–Sea Circulation

Since 2009, KDDI's TOHOKU Regional Office has participated in forest conservation activities in the village of Kajika in Tome, Miyagi Prefecture. In 2012, the office also cleaned up oyster shells and cleared away fishing lines from the ocean to allow for aquaculture on the Karakuwa Peninsula in Kesennuma, Miyagi Prefecture. In addition to thinning away brush to allow forests to flourish, volunteers assisted in the process of cleaning the water of the Kitakami River, which flows from the village of Kajika into Ishinomaki Bay, encouraging the cultivation of quality shellfish and assisting the harvest cycle in Kesennuma Bay.

Gathering oyster shells

In FY2012, the KDDI Workers Union participated in these activities.

Government Collaboration

KDDI's KANSAI Regional Office has taken part since 2008 in the Tennozan Regional Forest Promotion Council, comprising local government bodies, citizens, and companies in the neighborhood of Tennozan in the town of Oyamazaki, Otokuni, Kyoto Prefecture. Employees worked to recharge* water resources, which have suffered from the deterioration of forests on Tennozan and are no longer able to fulfill their conventional functions, and create a beautiful woodland.

Principal activities included planting trees and thinning away brush for firewood. Firewood was donated to local childcare centers and social welfare facilities, helping to further build relations among the community.

Thinning away brush for firewood

* Cultivation to ensure proper water quality and water levels

VOICE **Stakeholder Feedback**

Mr. Denmei Eshita

Town Mayor

Oyamazaki, Otokuni, Kyoto Prefecture

The bamboo forests on Tennozan, a symbol of the town of Oyamazaki, have been deteriorating for some time as they have not been cared for.

Companies and government bodies cooperated to launch the Tennozan Regional Forest Promotion Council, which has contributed to forestation activities, helping to restore the previously denuded moso bamboo to their previous vigor.

Forest conservation activities take a long time to materialize to the point where they are visible to the eye, so activities need to be long term. I hope KDDI will continue to provide support.