Environmental Accounting

We introduced environmental accounting in FY2000 with the aim of acquiring quantitative understanding of the costs and benefits of our environmental activities. The resulting costs and benefits are disclosed to stakeholders and also are analysed to develop efficient and effective environmental activities.

1 Environmental Activity Costs and Benefits

Unit: 100 million yen

Category		Main activities	Investment		Cost	
			2004	2005	2004	2005
Global environment conservation	Global warming prevention	Installation of power sources with low CO_2 emissions, thermal efficiency improvement at thermal power stations, introduction of and support for new energy equipment/facilities,*1 contribution to greenhouse gas reduction investment fund, energy saving (incl. low-emission/fuel-efficient vehicles and energy saving buildings), SF_6 emission reduction	0.8	2.0	60.3*1	75.1
	Ozone layer protection	Measures for freons and halon recovery	0.3	0.7	0.5	0.2
Local environment conservation	Air pollution prevention	Flue gas treatment (desulfurization, denitration, particulate reduction equipment) and use of fuel of low sulfur content	9.2	1.9	105.4	87.0
	Water pollution prevention	Wastewater treatment and measures against oil leaks and warm wastewater at power stations	7.4	1.0	29.0	29.5
	Noise and vibration prevention	Noise and vibration measures at power stations, substations and transmission facilities, ground pollution measures	4.3	4.9	1.0	1.9
Resource recycling	Industrial waste	Reduction and recycling of industrial waste	9.7	2.6	42.5	50.7
		Disposal of industrial waste, storage and treatment of PCBs*2*3	3.1	1.1	55.2*2	16.7
	General waste	Reduction and recycling of general waste	0.9	0.2	7.0	4.2
		Disposal of general waste	0.0	0.5	2.3	4.6
	Radioactive waste and spent nuclear fuel	Disposal and other treatment of radioactive waste	12.7	30.0	57.1	58.9
Green procurement		Additional costs incurred from green procurement	–	–	0.0	0.0
Environmental activity management	Environmental activity organization	Costs for environment-related license acquisition, environmental education, training and personnel employment	–	–	3.2	3.4
	EMS application and maintenance	EMS (ISO 14001 and ISO compliant systems) acquisition, application and maintenance	0.0	0.0	1.3	0.9
	Environmental load measurement and monitoring	Environmental impact assessment, monitoring and measurement of environmental load substances	1.5	2.4	13.5	13.0
Environment-related research	Environmental conservation	Global warming prevention, air and water quality improvement and effective use of waste, etc.	0.0	0.0	1.5	1.6
	Environmental load control during transmission and distribution	Improvement in thermal efficiency and transmission/distribution loss factor, etc.	–	–	0.0	0.0
Social activities	Greening of sites	Greening, maintenance and management of power stations and other sites	3.3	3.1	13.4	16.7
	Maintaining quality townscapes and surroundings	Measures to create harmony with surroundings including buildings with scenic care and installing underground transmission and distribution lines	63.5	62.1	82.2	80.8
	Environment Month	Environment Month and Kyushu Homeland Forestation Program	–	–	1.2	1.0
	Supporting local environmental activities	Support for local environmental activities and environmental organizations	–	–	0.6	0.4
	Environmental information disclosure	Environment Action Report, brochures and website construction	–	–	0.3	0.4
Response to environmental impairment		Pollution load levy	–	–	7.1	7.2
Total			116.6	112.7	484.7	454.4
Reference		Percentage of total investments and costs	6%	6%	4%	4%
		Total Kyushu Electric Power investment and costs	2,001	1,844	11,855	12,197

Note: Costs include depreciation expense. Figures are rounded and may not add up to the total.
*1 : FY2004 data has been partially recalculated due to the revision of some calculation standards for environmental activity costs.
*2 : FY2004 data, including allowances for PCB disposal costs, has been recalculated.
*3 : Includes expenses for investigating trace amounts of PCB.
*4 : Excludes allowances for re-processing of spent fuel (see Reference)

[Reference]

Main activities	Cost	
	2004	2005
Allowance for used nuclear fuel reprocessing, etc.	266.3	310.8

Items		2004 Benefits	2005 Benefits
Amount of CO_2 reduced	Nuclear power generation	32.06 million tons-CO_2/yr	32.20 million tons-CO_2/yr
	LNG power generation	5.85 million tons-CO_2/yr	5.70 million tons-CO_2/yr
	Hydro/geothermal power generation	6.82 million tons-CO_2/yr	4.81 million tons-CO_2/yr
	New energy power generation and purchase	0.59 million tons-CO_2/yr	0.79 million tons-CO_2/yr
	Thermal efficiency improvement, transmission/distribution loss reduction *5	2.64 million tons-CO_2/yr	3.11 million tons-CO_2/yr
	Greenhouse gas reduction fund	0 tons-CO_2/yr	0 tons-CO_2/yr
	Energy saving activities	238 tons-CO_2/yr	363 tons-CO_2/yr
	SF_6 emission reduction *6	0.55 million tons-CO_2/yr	0.45 million tons-CO_2/yr
Freon emissions *7		1.6 ODP tons/yr	0.2 ODP tons/yr
SOx reduction *8		40,600 tons/yr	45,900 tons/yr
NOx reduction		16,000 tons/yr	18,300 tons/yr
Particulate reduction *8		306,200 tons/yr	354,900 tons/yr
Environmental load reduced in wastewater *9		727 tons/yr	882 tons/yr
Managed appropriately in conformity with laws and ordinances			Managed appropriately in conformity with laws and ordinances
Amount recycled		590,000 tons/yr	634,000 tons/yr
Amount correctly disposed of		53,000 tons/yr	56,000 tons/yr
Used paper, shells, driftwood recycled		11,290 tons/yr	9,990 tons/yr
Used paper, shells, driftwood properly disposed		1,728 tons/yr	1,637 tons/yr
Volume reduction in low-level radioactive waste		1,489 containers/yr (each equivalent to one 200-liter oil drum)	1,876 containers/yr (each equivalent to one 200-liter oil drum)
Amount of used nuclear fuel stored		2,996 assemblies	3,168 assemblies
Green products (power material and equipment) purchased through green procurement		10,430 items	19,183 items 2,849 km (Recycled aluminum electric wire)
Participants in training and lectures		17,133 persons/yr (gross)	17,833 persons/yr (gross)
Personnel with environment-related licenses		1,813 persons	1,913 persons
Sites acquired ISO 14001 certification		6 sites	6 sites
Sites introduced ISO compliant systems		136 sites	121 sites *10
Number of monitoring and measurement points	Continuous monitoring and measurement items	188 items	189 items
	Other monitoring and measurement points	29,945 points	30,759 points
Research cases underway towards practical application		9 cases	25 cases
Total green area		46.99 million m²	47.02 million m²
Number of buildings with scenic care		190 buildings	191 buildings
Number of steel towers with environmental care		83 units	85 units
Length of underground distribution lines		3,149 km	3,247km
Number of participants at lectures		3,084 persons/yr (gross)	3,174 persons/yr (gross)
Number of trees, saplings distributed		140,362/yr	136,782/yr
Number of environment organizations supported		36 organizations	54 organizations
Number of reports published		33,800/yr	33,500/yr
Website access (environment-related)		306,300 hits/yr	254,400 hits/yr
–		–	–

*5 : FY1990 is the base year for benefit calculation.
*6 : The weight of CO_2 has been calculated using the global warming potential for SF_6 (23,900). The volume of the reduction includes reductions achieved through the inspection and overhaul of equipment.
*7 : CFC–11 weight calculated using the coefficient for freon damage to the ozone layer.
*8 : FY2004 data have been recalculated due to a revision of the calculation method.
*9 : COD standard weight calculated based on environmental standards for pollutants in wastewater.
*10 : Office relocation activity has reduced the number of separate offices. (▲15 offices)

2 Economic Effects from Environmental Activities

In fiscal 2005, our environmental activities brought about real economic effects, savings and income, of 20.35 billion yen.

Unit: 100 million yen

Category		Main activities	Benefits 2004	Benefits 2005
Global environmental conservation	Global warming prevention *1	Fuel cost savings from improvement of thermal efficiency and the transmission/distribution loss factor; introduction of energy-saving, low-emission/fuel-efficient vehicles	93.4	136.4
Resource recycling	Waste measures	Income from sales of unneeded supplies	2.4	3.7
	Waste reduction	Final disposal cost savings from recycling	36.6	43.2
Savings in statutory charges		Pollution load levy savings from SOx emissions reduction *2	17.6	20.2
Total			150.0	203.5

*1 : Benchmark year for benefit calculation is FY1990.
*2 : FY2004 data has been recalculated due to revision of SOx reduction volume calculation standards.

3 FY2005 Calculation Results

Environmental activity investments and costs for FY2005 were 11.27 billion yen and 45.44 billion yen respectively. Compared to FY2004, environmental activity investments decreased by 0.39 billion yen and the costs decreased by 3.03 billion yen.

Investments

Investment in low-level radioactive waste disposal, such as the expansion of used resin storage tanks, as well as in spent fuel storage, was increased.
Meanwhile, wastewater treatment in conjunction with the construction of the Omarugawa Power Station and capital investment for the effective use of coal ash at the Matsuura Power Station are proceeding as planned, meaning that overall investment dropped 3% in comparison with the previous year on the back of partial completion of countermeasure construction work.

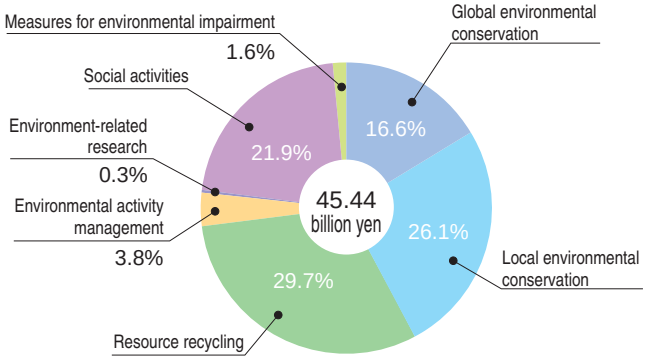
Costs

Power purchase costs increased due to the increase of purchasing costs in conjunction with the introduction of new energy sources. However, reactionary fall in the listing of FY2004 PCB treatment reserves resulted in a 4% drop in comparison with FY2004.

Effects of Environmental Activity

The amount of CO_2 reduced increased as a result of a higher rate of nuclear power use, but droughts caused a drop in the amount of CO_2 reduced through hydro electric power generation.

Environmental activity cost component ratio (FY2005)



4 Working Towards Better Environmental Accounting

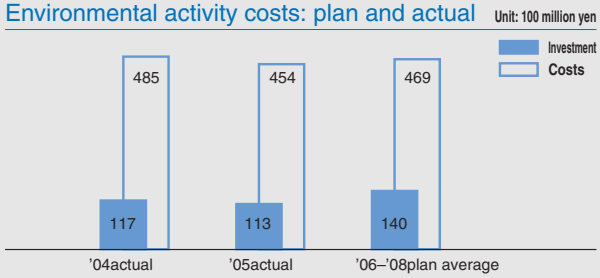
Using environmental accounting to improve environmental efficiency

Having introduced a systematic environmental accounting system and striven to publish ever more transparent environmental data, we at Kyushu Electric Power aim to make effective use of that system as a tool for furthering our environmental corporate management regime, for example by using the successes of the system to good effect in our in-house decision-making processes.
It is our intention to further establish and develop our environmental accounting system so as to further improve our environmental efficiency and to further reduce our environmental load.

■Cost plan for environmental activities

Carrying on from FY2004, Kyushu Electric Power formulated a group-wide cost plan for environmental activities aimed at optimal allocation of management resources.
From mandatory to voluntary measures, the costs and effects of environmental activities are various. That is why we have established a range of judgement criteria for each environmental activity and a cost plan for environmental activities determined based on deliberation regarding the appropriateness of cost standards.

Environmental activity costs: plan and actual



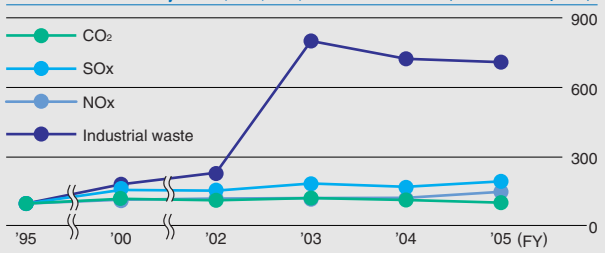
■Environmental efficiency

We calculate environmental efficiency as an easy understandable yardstick of success, when we measure and publish the achievement of our environmental corporate management.

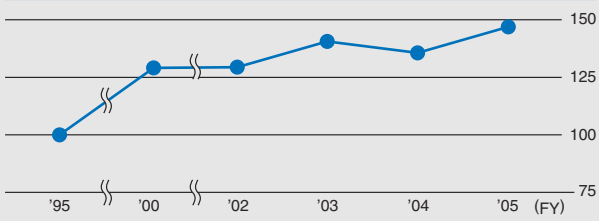
$$\text{Environmental efficiency} = \frac{\text{Product and service value}}{\text{Environmental load}}$$

Integrated environmental load
Using an integration coefficient*, we integrate the various environmental loads.
*The integration coefficient used is of the ELP method (developed by the Nagata Laboratory of Waseda University).

Environmental efficiency of CO_2, SOx, NOx, and industrial waste (based on electricity sales)



Environmental efficiency of integrated environmental load (based on electricity sales)



Note: Data are relative to the FY1995 figure taken as being 100.
* Environmental efficiency = electricity sales ÷ various environmental loads.

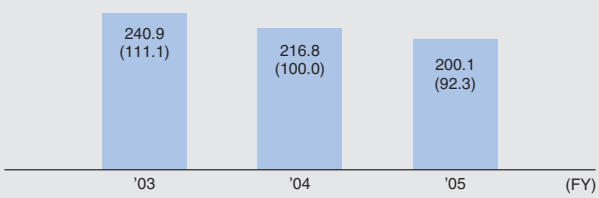
■Efficiency of environmental load reduction

We calculate the "quantity" of integrated environmental activity benefits that lead directly to the reduction of environmental load, and divide this by the cost of those environmental activities to attain the figure that represents efficiency of environmental load reduction.

$$\text{Efficiency of environmental load reduction} = \frac{\text{Quantity of environmental load reduction}}{\text{Cost of environmental activities}}$$

Integrated environmental activity benefit
Using an integration coefficient*, we integrate the various benefits of environmental activities.
*The integration coefficient used is of the ELP method (developed by the Nagata Laboratory of Waseda University).

Efficiency of environmental load reduction*



Note: FY1990 is the base year for CO_2 efficiency calculation.
Environmental activity costs and effects have been partially revised beginning in FY2003.
The figures in parentheses denote figures that are relative to the FY2004 figure, which is taken as being 100.
*Efficiency of environmental load reduction = integrated environmental activity benefits (CO_2, SOx, NOx, particulate, wastewater, industrial and general waste) divided by cost of environmental activities (excludes depreciation costs).

Analysis of trial calculation results

Trial calculations showed that integrated environmental load reduction effects were down by approximately 8% from FY2004. This comes as a result of reduction in hydro-generated electricity due to droughts and a subsequent drop in CO_2 amount reduced, as well as an increase in power purchasing costs in conjunction with the introduction of new energy sources and an increase in environmental activity costs for CO_2 reduction.

TOPICS

Web-based environmental accounting system introduce

Introduced in FY2000 as a means of promoting environmental management, the environmental accounting system has thus far been used to calculate and create a database of information pertaining to each business site's environmental load and environmental activity costs. However, in view of our desire to step up our environmental corporate management, a new web-based environmental accounting system, which allows for data entry and calculation over the internet, has been built and implemented in April 2006.
The new system improves data accuracy and raises the level of environmental management, and also aims to increase work efficiency. We hope to achieve further reinforcement of the system through its use.