# 4 Environmental Accounting

We introduced environmental accounting () in fiscal 2000 with the aim of acquiring quantitative understanding of the costs and benefits of the environmental activities. The resulting costs and benefits are disclosed to the stakeholders (), and also are analyzed to develop efficient and effective environmental activities. The results in fiscal 2004 are shown below.

# Environmental Activity Costs<sup>1</sup> and Benefits (FY2003 and FY2004 records)

Unit: 100 million yen (except for those specially indicated)											
	Catagony	Main activition	FY2	2003	FY2004			Itoms	FY2003 FY2004		
	Calegory	IVIAILI ACTIVITIES	Investment	Cost	Investment	Cost		items	Benefits	Benefits	
nent conservation		Installation of power sources with low CO2 (D) emissions, thermal efficiency (D) improvement at thermal power stations, introduction of and support for new energy (D) equipment/facilities.	0.6					Nuclear power generation	33.33 million tons-CO2/yr	32.06 million tons-CO2/yr	
								LNG power generation	5.59 million tons-CO2/yr	5.85 million tons-CO2/yr	
	Global warming prevention			70.2	0.8	85.5	tion	Hydro/geothermal power generation	6.66 million tons-CO2/yr	6.82 million tons-CO2/yr	
							quc	New energy power generation and purchase	0.5 million tons-CO2/yr	0.59 million tons-CO2/yr	
		contribution to greenhouse gas					Be	Thermal efficiency improvement, transmission/ distribution loss ① reduction * 1	2.52 million tons-CO2/yr	2.64 million tons-CO2/yr	
iron		reduction investment fund <sup>①</sup> , energy					õ	Greenhouse gas reduction fund	4,512 tons-CO2/yr	0 tons-CO <sub>2</sub> /yr	
env		saving (incl. low-emission/fuel-efficient						Energy saving activities	217 tons-CO <sub>2</sub> /yr	238 tons-CO <sub>2</sub> /yr	
bal		ildings), SF6 @ emission reduction						SF6 emission reduction*2	0.4 million tons-CO2/yr	0.55 million tons-CO2/yr	
U S S	Ozone layer i protection	Measures for freons (1) and halon (1) recovery	0.8	0.3	0.3	0.5	Fre	eon emissions*3	0.2 ODP tons/yr	1.6 ODP tons/yr	
t	· · ·	Flue gas(i) treatment (desulfurization(i)					SC	Dx reduction	33,270 tons/vr	46.043 tons/vr	
nen	Air pollution () prevention	denitration (), particulate () reduction equipment) and use of fuel of low sulfur	57.4	156.0	9.2	105.4			13 473 tons/yr	15,000 tons/yr	
I uu							Pa	uticulate reduction	07 567 was to	125 251	
envi vati		Vastewater treatment and measures against oil					En	vironmental load	97,307 tons/yr	135,351 tons/yr	
cal e	Water pollution (i) prevention	leaks and warm wastewater (1) at power stations	16.4	28.9	/.4	29.0	rec	duced in wastewater*4	498 tons/yr	/2/ tons/yr	
Loc	Noise and vibration prevention	Noise and vibration measures at power stations, substations and transmission facilities, ground pollution T measures	7.4	1.4	4.3	1.0	Ma an	anaged appropriately in co d ordinances	onformity with laws	Managed appropriately in conformity with laws and ordinances	
0		Reduction and recycling of industrial waste	14.7	48.1	9.7	42.5	Amount recycled 543 thousand tons/		543 thousand tons/yr	590 thousand tons/yr	
clin		Disposal of industrial waste and PCB  storage*5	10.7	10.6	3.1	8.6	Pro	oper final disposal amount	46 thousand tons/yr	53 thousand tons/yr	
ecy	Conorol wasto	Reduction and recycling of general waste	0.5	5.9	0.9	7.0	Use drif	ed paper(), shells, itwood recycled*6	7,657 tons/yr	11,290 tons/yr	
ce	General waste	Disposal of general waste	0.1	1.2	0.0	2.3	Use pro	ed paper, shells, driftwood perly disposed*6	1,680 tons/yr	1,728 tons/yr	
sour	Radioactive waste① and spent nuclear fuel* <sup>7</sup>	Disposal and other treatment of radioactive waste	0.6	60.6	12.7	57.1	Vol rad	lume reduction in low-level lioactive waste	1,948 containers/yr (each equivalent to one 200-liter oil drum)	1,489 containers/yr (each equivalent to one 200-liter oil drum)	
Ве							Am sto	nount of used nuclear fuel red $\oplus$	2,914 assemblies	2,996 assemblies	
Green procurement  Additional costs incurred from green procurement			-	0.0	-	0.0	Gre and gre	een products① (power material d equipment) purchased through en procurement <sup>*6</sup>	-	10,430 items	
ŧ	Environmental	Costs for environment-related license acquisition,					Par	ticipants in training and lectures	17,820 persons/yr (gross)	17,133 persons/yr	
nen	activity organization	environmental education (1), training and personnel employment	0.0	3.2	0.0	3.2	Per	rsonnel with environment-	1,669 persons	1,813 persons	
agei	EMS application	EMS (ISO 14001 (1) and ISO compliant	0.0	3.6	0.0	1.3	Site	es acquired ISO 14001	6 sites	6 sites	
nen	and maintenance	systems (1) acquisition, application and maintenance					Site	es introduced ISO compliant	139 sites	136 sites	
onn ty n	Environmental load measurement and	Environmental impact assessment, monitoring and measurement of environmental	1.3	13.9		13.5	ng sys	Continuous monitoring	194 items	188 items	
ctivi					1.5		and measurement items		TOTILEIIIS	TOO tierns	
мш	monitoring	load substances, and $PRTR_{\oplus}$ measures					Number and mea	measurement points	27,641 points	29,945 points	
ent-	Environmental	Global warming prevention, air and					Res	Research cases underway			
onme 3d arch	conservation	water quality improvement and effective use of waste	0.0	1.7	0.0	1.5	tov	wards practical	9 cases	9 cases	
Envir relate resea	Environmental load control during transmission and distribution	Improvement in thermal efficiency and transmission/distribution loss factor	0.0	0.0	0.0	0.0	application*				
	Greening of sites	Greening, maintenance and management	85	11 0	33	13.4	То	tal green area	47.05 million m <sup>2</sup>	46.99 million m <sup>2</sup>	
		Measures to create harmony with	0.5	11.5	0.0	10.4	Nu	mber of buildings with	182 buildings	190 buildings	
õ	Maintaining quality townscapes and surroundings	surroundings including buildings with scenic care and installing underground transmission and distribution lines	62.9	86.2	63.5	82.2	Number of steel towers with		82 units	83 units	
vitie							Len	vironmental care	3 073 km	3 149 km	
Social acti		Environment Month and Kyushu Homeland Forestation Program	0.0	0.9	0.0	1.2	dist Nu	tribution lines mber of participants at	1 337 persons/yr	3 OBA persons/yr	
	Month						Nun	tures mber of trees and saplings nted	164,101 yr	140,362 yr	
	Supporting local environmental activities	Support for local environmental activities and environmental organizations	0.0	0.2	0.0	0.6	Nui	mber of environment	<b>39</b> organizations	36 organizations	
	Environmental	Environment Action Report						mber of reports published	34,300 yr	33,800 yr	
	information disclosure	brochures and website construction	0.0	0.5	0.0	0.3	We (en	bsite access ivironment-related)	266,229 hits/yr	306,300 hits/yr	
Response to environmental impairment Pollution load levy and measures against oil leakage			0.0	7.8	0.0	7.1		-	-	-	
Total			181.9	513.2	116.6	463.3	*1: *2'	<ul> <li>*1: Benchmark year for benefit calculation has been revised to FY1990.</li> <li>*2: SEe onisoing reduction is converted to the watch of COs using the statistic memory of the statist</li></ul>			
Percentage in Japan's total investments and costs			9%	4%	6%	4%		$\sim$ SF6 emission reduction is converted to the weight of CO2 using the global was SF6 $\oplus$ (23,900). The amount of reduction includes that attained by equipm			
Reference Tota Tota		Total investments	2.0	069	2.0	001	aismantiement. *3: The emissions reduction for freons was converted into a relative value taking the ozone dep				
		Total costs	12			355		potential (ODP) per unit weight of CFC-11 D as 1.			
			· · -,		<u> </u>	11,000		Reduction of wastewater load is d	letermined by converting weight	of each pollutant contained in the	

Note: Costs include depreciation expense. Figures are rounded and may not add up to the total Revisions were made to some items of the environmental activity costs for FY2003.

[Reference

e]	Main activities	FY2	003	FY2004		1	
	Main activities	Investment	Cost	Investment	Cost		
	Allowance for used nuclear fuel reprocessing*8, etc.	0.0	270.4	0.0	266.3	<sup>′</sup>	

\*4: Reduction of wastewater load is determined by converting weight of each pollutant contained in the wastewater, measured based on the environmental standards, into the weight based on CODO standards. 0.

\*5: High concentration PCBI treatment costs, incurred and accrued in FY2004, are not included.

\*6: Some items and standards under the environmental activity benefits have been revised.

\*7: The figure does not include allowance for spent fuel reprocessing. (See the reference table).

\*\*\* The light does not include any and to by spin the telefoldessing, (see the telefolde table).
\*8: With respect to reprocessing the used nuclear fuel which is stored at the end of a fiscal year, the costs required in the future to reprocess such used nuclear fuel are partially accrued at each year-end in accordance with applicable regulations.

20



# 2 Economic Effects from Environmental Activities (FY2003 and FY2004)

In fiscal 2004, our environmental activities brought about real economic effects, savings and income, of 15.24 billion ven.

(Unit: 100 million yen)							
0		Main activities	Benefits				
Category		Main activities	FY2003	FY2004			
Global environmental conservation	Global warming prevention*	Fuel cost savings from improvement of thermal efficiency and the transmission/ distribution loss factor; introduction of energy-saving, low-emission/fuel-efficient vehicles	82.0	93.4			
Resource recycling	Waste measures	Income from sales of unneeded supplies		2.4			
	Waste reduction	Final disposal cost savings from recycling	37.4	36.6			
Savings in stat	utory charges	Pollution load levy savings from SOx emissions reduction		20.0			
Total							

\* Figures are rounded and may not add up to the total. Benchmark year for benefit calculation has been revised to FY1990.

### FY2004 Calculation Results

Environmental activity investments and costs for fiscal 2004 were 11.66 billion yen and 46.33 billion yen respectively. Compared to fiscal 2003, environmental activity investments decreased by 6.53 billion ven and the costs decreased by 4.99 billion ven.

#### **◊** Investments

Engineering costs were newly incurred for facilitating Genkai Nuclear Power Station to deal with low-level radioactive waste. Overall investment decreased considerably, however, compared to fiscal 2003 since no capital investments in flue gas and wastewater treatment facilities were recorded after completion of the Unit 2 of Reihoku Thermal Power Station in fiscal 2003.

#### **♦** Costs

Power purchase costs increased due to the dissemination and promotion of the use of new energy sources. However, a substantial cost reduction was achieved compared to fiscal 2003. This is because of the decrease in fixed costs and depreciation expense from the dismantlement of the Units 1 and 2 of Shin Kokura Thermal Power Station and Minato Thermal Power Station.

### Output Description State Activity

Other points that showed an increase/decrease from fiscal 2003 are: freon emissions due to inspection of fire control facilities installed at power stations; the amount of SOx and NOx reductions owing to the increase in power generation at thermal power stations.

### Budgeting for Environmental Activity

In fiscal 2004, we started to draft a future plan for the company's environmental activity costs allocation, which forms a part of our environmental accounting system. The future plan aims to realize an optimal allocation of the company's managerial resources. The plan is formulated through calculation of an optimal balance between activity costs and efficiency based on the criteria for environmental activity cost investments. Managerial resources are then allocated according to the plan.

We make further efforts to develop our environmental accounting system, aiming to achieve the best possible environmental efficiency 1 and environmental load reduction rate per cost in the industry.

### Environmental activity cost component ratio (FY2004)



#### Environmental activity cost record and future plan



TOPIC

Towards the further development of optimal environmental accounting system

We actively take part in research activities for further utilization of environmental accounting system. Since fiscal 2003, the company has been taking part in a working group on an environmental budget matrix study set up under the surveys and studies on environmental business development and promotion commissioned by the Ministry of Economy, Trade and Industry. Research on potential application of the method was carried out with the guidance of Professor Yoshihiro Ito of Kobe University Graduate School (present Professor of Waseda University Graduate School of Commerce). Further studies will be conducted to establish an environmental accounting method that best suits our character of business.