

Environmental Data Book

Year Ended March 31, 2017

For feedback and suggestions

Corporate Communications Group

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Santen Group's CSR policy on Environmental Conservation is

“Recognizing that biodiversity is the basis for a healthy global environment, Santen Group will promote activities to protect and preserve the global environment, so as to pass on a beautiful planet to the generations that follow.”

With this policy and recognition that environmental conservation and protection efforts are a responsibility as a corporate citizen, Santen Group (hereafter “Santen”) is engaged in environmental conservation and protection, and issues “Environmental Data Book” annually, for communicating our outline of activities' results to the stakeholders.

Information on the latest activities, and other Corporate Social Responsibility-related information are disseminated on a timely basis through the website (www.santen.com/en/csr).

(Reporting period)

Japan: April 1, 2016 – March 31, 2017

other countries: January 1, 2016 – December 31, 2016

(Reporting coverage)

Japan: all facilities including sales office of Santen Pharmaceutical Group.

Other countries: Principal production facilities, Tampere Plant (Finland) and Suzhou Plant (China)

(Important change in organization during the reporting period)

Transfer of functions of Osaka Plant to other plants completed and Osaka Plant was closed by March, 2015.

(Guidelines referenced)

This data book has been prepared with reference to the Environmental Reporting Guidelines (2012 edition, Ministry of the Environment Japan), GHG Intensity calculation database (ver.2.3, Ministry of the Environment Japan), Environmental Accounting Guideline (2005 edition, the Ministry of the Environment Japan), and GRI 4.0.

(Notational system of numerical results)

Total and tallies of shares may not always match, due to the effect of rounding.

(Currency exchange rate - U.S. dollar amounts)

In this data book, U.S. dollar amounts have been translated from yen, solely for the convenience of the reader, at the rate of ¥112.19 to US\$1.00, the exchange rate prevailing on March 31, 2017.

(Date of issue)

June, 2017

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1. Environmental management

■Mid-term activity themes, targets, and performances in FY2016

mid-term theme	action item	KPI	target (FY2020)	performance in FY2016
Preventing global warming	Promote measures for reducing CO ₂ emissions	CO ₂ emission volume	lower than 27,232t-CO ₂ ※1	24,545t- CO ₂ ※2
Resources conservation and waste management	Promote zero-emission activities	Final waste disposal ratio	0% ※1	0.012% ※2
	Prevent environmental pollution	Legal and regulatory compliance rate	100%	100%
Protecting environment	Conduct environmental conservation activities	Continuous execution of contribution activities	—	number of employee participated: 552 ※2

※1 : Geographic scope of target is Japan, and target year is FY2020

※2 : Geographic scope of performance data is Japan

■ISO14001 certification

organization	scope of activity	aquisition period
As integrated organization Shiga Product Supply Center, Noto Plant, and Claire Co., Ltd	Production of pharmaceuticals Cleaning of antidust and sterilized clothing	December, 2014 ※
Santen Oy (Finland)	Product development, production, sales and ,marketing of pharmaceuticals	September, 2008

※ : Shiga Plant was registered in 1999, Noto Plant was in 2003, and were migrated to integrated organization certification in 2014

■Environmental management audit

Each site takes the initiative in conducting regular internal audits to check whether the environmental management system is appropriately operated. Additionally, Santen accepts on-the-spot audits by commissioned companies of the process of commissioned production, providing good opportunities to learn about other companies' efforts, and contributing to improving our environmental measures.

■Environmental risk assessment

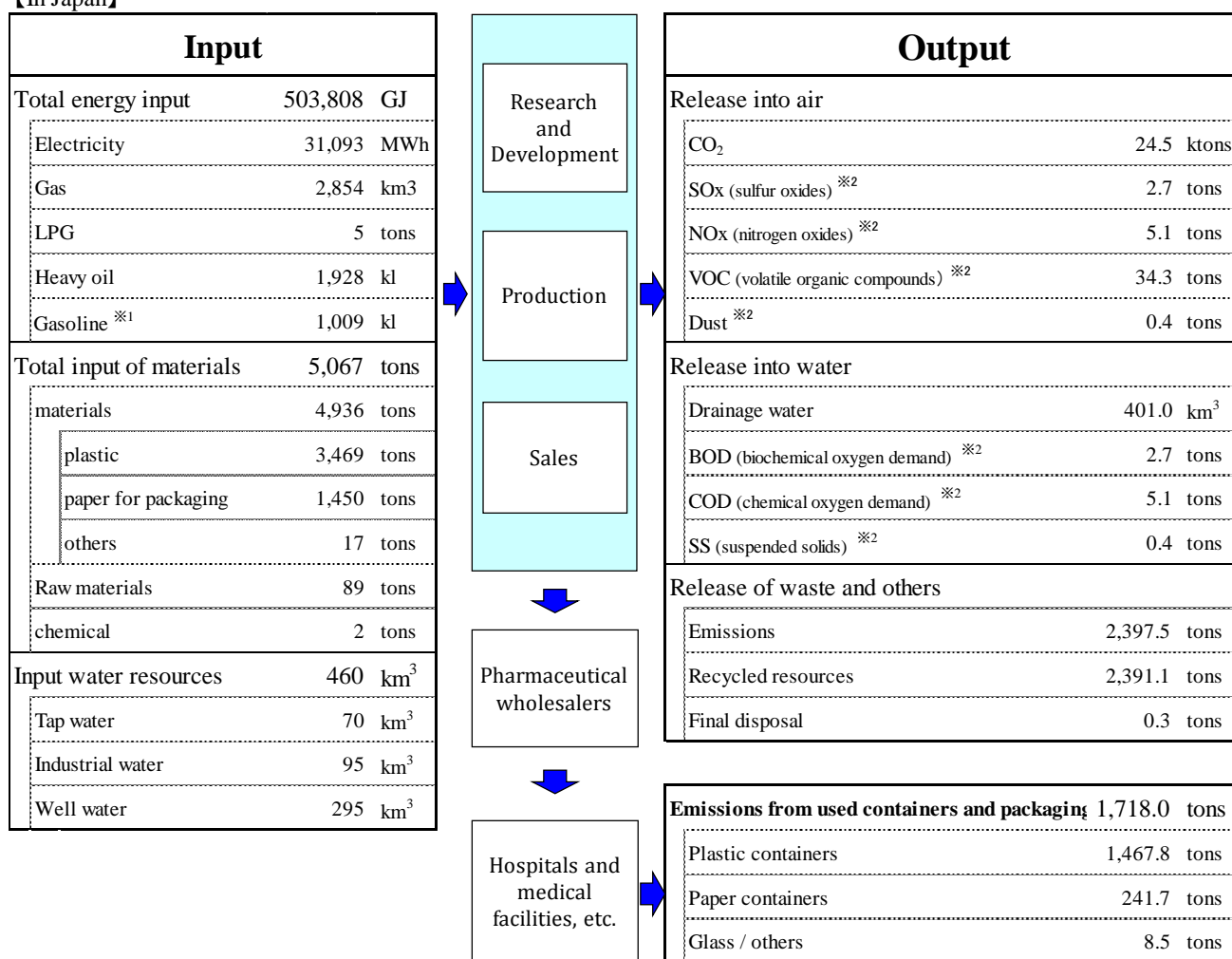
Santen conducts environment-related risk assessment and confirm that there is no significant risk, for our major production and research facilities, with utilizing WWW-DEG Water Risk Filter, and so on.

■Environment-related accidents and complaints

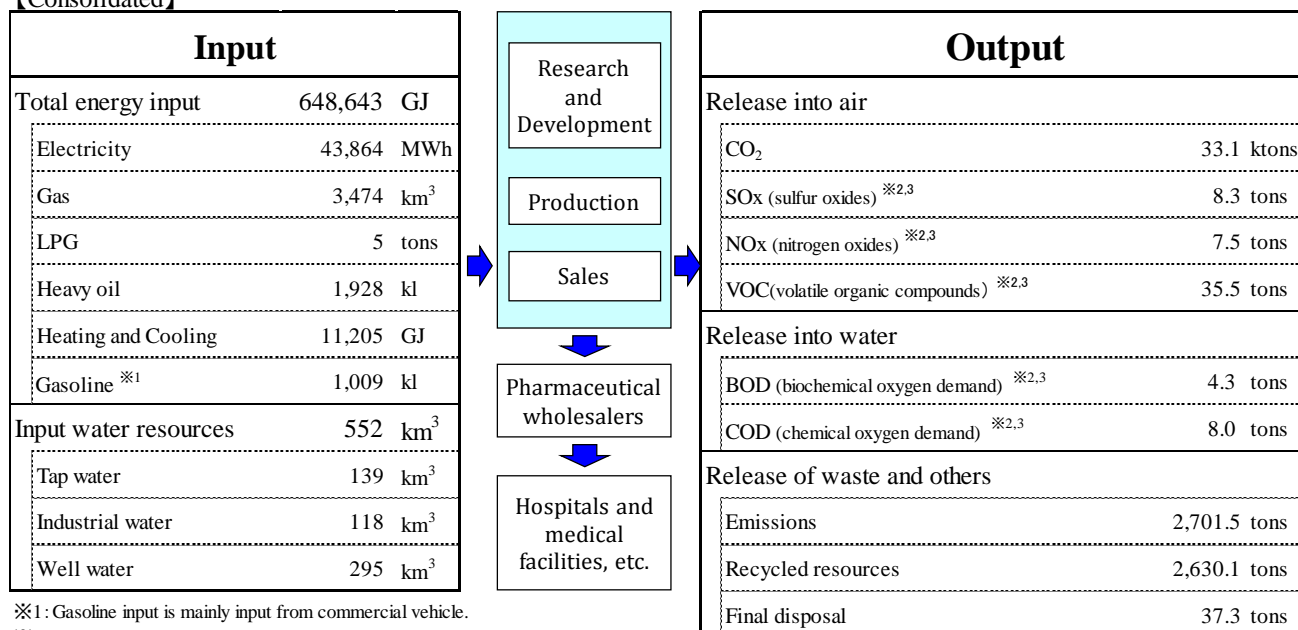
There was no accident that causes environmental pollution, ie. soil contamination, and no infraction of laws or regulations related environmental issues, at our business sites in Japan or other countries.

■ Overview of environmental impact

【In Japan】



【Consolidated】



※1: Gasoline input is mainly input from commercial vehicle.

※2: Emission is based on results from regular examinations.

※3: Suzhou Plant in China is excluded.

2. Preventing global warming

■Greenhouse gas (CO₂) emissions by Scope in FY2016

(Scope1 and 2)

(unit : t-CO₂)

	Scope1	Scope2	Total
In Japan	14,113	10,432	24,545
Outside Japan	2,510	6,053	8,563
Total	16,623	16,485	33,108

(Scope3 — in Japan)

category	CO ₂ emissions (t-CO ₂)	calculation methodology
1 : Purchased goods and services	129,157	estimated figures based on multiplying the weight of raw materials, ingredients, or purchase amount of stock goods by the emission factors of the calculation database.
2 : Capital goods	18,256	estimated figures based on multiplying the amount of money for acquisition of the fixed assets by the emission factors of the calculation database.
3 : Fuel-and- energy related activities (not included in Scope1 or 2)	1,101	estimated figures based on multiplying the usage of electricity by the emission factors of the calculation database.
4 : Upstream transportation and distribution	573	estimated figures based on the transportation distance between the plants/logistics centers and the destinations (pharmaceutical wholesalers, etc.) with using the fuel consumption method or the ton method.
5 : Waste generated in operations	357	estimated figures based on multiplying the weight of each waste discharged by the emission factors of the calculation database.
6 : Business travel	3,430	estimated figures based on multiplying the travel expenses of each transportation type and accommodation expenses by the emission factors of the calculation database.
7 : Employee commuting	413	estimated figures based on multiplying the commutation expenses of public transportation systems and the amount of gasoline used of the commuter cars by the emission factors of the calculation database.
1 2 : End of life treatment of sold products	219	estimated figures based on multiplying the weight of each materials for the sold products and packaging by the emission factors of the calculation database.

calculate CO₂ emissions reference with "GHG Intensity calculation database" (ver.2.3, Ministry of the Environment Japan)

Category 8,10,11,13-15 are not indicated, because of our business characteristics. Category 9 is not calculated and indicated, at present.

■Renewable energy

type	Energy Volume (MWh)	remarks
Solar energy generation	13	Generated by solar energy equipment installed in Nara Research and Development Center. Not included in energy consumption.
Purchased renewable energy	554	Purchased and consumed in Tampere Plant. Not subtracted from the amount of energy consumption.
Total	567	

■Greenhouse gas (CO₂) emissions trend

【In Japan】 (unit: t-CO₂)

Operational site	Year ended March 31					%Change 2017/2016
	2013	2014	2015	2016	2017	
Osaka Office (and Osaka Plant)	4,510	3,265	4,345	336	246	-26.9
Noto Plant	10,868	9,340	9,761	10,097	10,817	7.1
Shiga Product Supply Center	5,158	5,416	5,431	6,544	6,543	0.0
Nara Research and Development Center	4,837	4,666	4,331	4,034	4,223	4.7
Branch and sales offices and others	2,709	2,803	3,369	2,740	2,716	-0.9
Total	28,082	25,491	27,237	23,751	24,545	3.3

For the CO₂ conversion factor for electric power, the emission factor of the Federation of Pharmaceutical Manufacturers' Associations of Japan is used.

CO ₂ emissions per unit of revenue	[t-CO ₂ /billion yen]	263.3	198.0	196.8	152.1	156.4	2.8
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【Outside Japan】

Tampere Plant (Finland)	2,265	2,252	2,120	2,015	1,831	-9.1
Suzhou Plant (China)	5,226	5,467	5,293	6,074	6,732	10.8
Total	7,491	7,719	7,413	8,089	8,563	5.9

For the CO₂ conversion factor for electric power, the emission factor of the International Energy Agency (IEA) is used.

【Consolidated】

Greenhouse gas emissions (CO ₂)		35,572	33,210	34,650	31,840	33,108	4.0
CO ₂ emissions per unit of revenue	[t-CO ₂ /billion yen]	298.8	223.4	214.1	163.0	166.3	2.0
CO ₂ emissions per unit of revenue	[t-CO ₂ /million \$]	33.5	25.1	24.0	18.3	18.7	2.0

■Energy usage trend

【In Japan】 (unit: GJ)

Operational site	Year ended March 31					%Change 2017/2016	
	2013	2014	2015	2016	2017		
Osaka Office (and Osaka Plant)	106,892	79,094	100,595	9,625	7,173	-25.5	
Noto Plant	222,110	204,470	212,605	219,213	236,784	8.0	
Shiga Product Supply Center	121,064	127,411	129,066	153,088	152,713	-0.2	
Nara Research and Development Center	112,775	109,050	101,513	93,807	98,259	4.7	
Branch and sales offices and others	43,193	44,768	55,237	8,001	8,880	11.0	
Total	606,035	564,792	599,016	483,733	503,808	4.1	
Energy usage per unit of revenue	[GJ/billion yen]	5,683	4,388	4,327	3,099	3,210	3.6

【Outside Japan】

Tampere Plant (Finland)	59,481	57,067	54,805	51,413	48,791	-5.1
Suzhou Plant (China)	72,824	76,348	77,560	83,871	96,044	14.5
Total	132,305	133,415	132,365	135,284	144,835	7.1

【Consolidated】

Energy usage		738,340	698,207	731,381	617,922	648,643	5.0
Energy usage per unit of revenue	[GJ/billion yen]	6,201	4,697	4,519	3,164	3,258	3.0
Energy usage per unit of revenue	[GJ/million \$]	695.7	526.9	507.0	355.0	365.5	3.0

3. Resources conservation and waste management

■Waste reduction and recycling trend

【In Japan】		(unit: t)					
Operational site		Year ended March 31					%Change
		2013	2014	2015	2016	2017	2017/2016
Osaka Office (and Osaka Plant)	Emissions	336	296	331	136	109	-20.2
	Recycled resources	272	241	321	132	105	-20.5
	Final disposal	3.1	11.4	2.0	0.2	0.2	-7.2
Noto Plant	Emissions	1,484	1,320	1,532	1,580	1,715	8.6
	Recycled resources	1,484	1,320	1,532	1,580	1,715	8.6
	Final disposal	0.1	0.1	0.1	0.0	0.0	—
Shiga Product Supply Center	Emissions	378	262	146	405	524	29.6
	Recycled resources	378	262	146	405	524	29.6
	Final disposal	0.0	0.0	0.0	0.0	0.0	—
Nara Research and Development Center	Emissions	146	130	111	103	49	-52.7
	Recycled resources	8	71	71	97	47	-51.7
	Final disposal	29.4	11.9	8.7	0.2	0.1	-50.4
Total	Emissions	2,344	2,008	2,121	2,224	2,398	7.8
	Recycled resources	2,142	1,894	2,071	2,213	2,391	8.1
	Final disposal	32.7	23.3	10.7	0.4	0.3	-18.9
	Final waste disposal ratio	1.4%	1.2%	0.5%	0.0%	0.0%	-24.8
Final disposal per unit of revenue	[t/billion yen]	0.31	0.18	0.08	0.00	0.00	-19.3
【Outside Japan】							
Tampere Plant (Finland)	Emissions	1,190	1,171	1,055	992	266	-73.2
	Recycled resources	294	237	252	263	234	-11.2
	Final disposal	25.3	17.9	7.6	6.5	4.0	-38.5
Suzhou Plant (China)	Emissions	50	34	43	58	38	-34.8
	Recycled resources	17	11	15	25	5	-80.2
	Final disposal	32.9	23.0	27.5	33.0	33.0	0.0
【Consolidated】							
Total	Emissions	3,585	3,213	3,219	3,274	2,702	-17.5
	Recycled resources	2,452	2,142	2,338	2,501	2,630	5.1
	Final disposal	90.8	64.2	45.8	39.9	37.3	-6.5
	Final waste disposal ratio	2.5%	2.0%	1.4%	1.2%	1.4%	13.4
Final disposal per unit of revenue	[t/billion yen]	0.76	0.43	0.28	0.20	0.19	-8.3
Final disposal per unit of revenue	[t/million \$]	0.09	0.05	0.03	0.02	0.02	-8.3

■Air pollutants emissions trend

【In Japan】		(unit: t)					
substance ※1	Year ended March 31					%Change	
	2013	2014	2015	2016	2017	2017/2016	
SOx (sulfur oxides)	2.8	2.1	2.2	4.5	2.7	-40.6	
NOx (nitrogen oxides)	6.4	4.3	8.3	5.5	5.1	-7.1	
VOC(volatile organic compounds)	22.1	27.0	31.0	26.5	34.3	29.4	
Dust	0.9	0.7	1.2	0.6	0.4	-37.3	
【Consolidated】 ※2							
SOx (sulfur oxides)	9.1	8.4	8.0	10.1	8.3	-18.1	
NOx (nitrogen oxides)	9.2	7.1	10.8	7.9	7.5	-4.9	
VOC(volatile organic compounds)	80.8	85.8	64.8	64.8	35.5	-45.2	

※1 : Emission is estimated based on results from regular examinations.

※2 : Suzhou Plant in China is excluded.

■Water pollutants emissions trend

【In Japan】 (unit: t)

substance ※1	Year ended March 31					%Change 2017/2016
	2013	2014	2015	2016	2017	
BOD (biochemical oxygen demand)	5.0	2.5	2.8	2.1	2.7	25.0
COD (chemical oxygen demand)	3.4	1.7	2.0	1.9	5.1	173.3
SS (suspended solids)	5.7	3.6	3.5	4.7	0.4	-91.9

【Consolidated】 ※2

BOD (biochemical oxygen demand)	11.2	7.2	9.0	7.4	4.3	-41.7
COD (chemical oxygen demand)	16.1	13.0	13.3	11.1	8.0	-27.5

※1 : Emission is estimated based on results from regular examinations.

※2 : Suzhou Plant in China is excluded.

■PRTR substances handled (in Japan)

【In Japan】 (unit: t)

substance	Year ended March 31					% Change 2017/2016
	2013	2014	2015	2016	2017	
Acetonitrile	1.8	1.6	1.4	1.8	1.8	3.0
Boron and its compounds	0.6	0.6	0.6	0.7	0.9	24.3
Xylene	0.3	0.2	0.2	0.2	0.1	-36.7
Others	1.2	0.4	0.2	0.2	0.1	-29.8
Total	3.9	2.9	2.4	2.8	2.9	4.0

Note : The data included chemical materials used more than 1 kg in a year

The number of substances over 1kg used per year	19	24	19	18	14	-22.2
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■PCB storage

At end of March 2017, Santen properly made harmless and disposed of PCB-containing equipment (fluorescent light use stable three units) that we kept at the Osaka Plant through the designated processing operator. As a result, we have no PCB-containing equipment in our business sites.

4. Protecting environment

■Water usage trend

Operational site		Year ended March 31					% Change 2017/2016
		2013	2014	2015	2016	2017	
		(unit: km ³)					
Osaka Office (and Osaka Plant)	Usage	67	44	60	5	4	-15.6
	Discharge	47	44	60	5	4	-15.7
Noto Plant	Usage	257	239	247	271	301	11.0
	Discharge	225	214	225	215	261	21.5
Shiga Product Supply Center	Usage	82	75	71	94	110	17.5
	Discharge	65	48	52	69	91	31.5
Nara Research and Development Center	Usage	52	46	41	41	44	9.1
	Discharge	33	46	41	41	44	9.1
Total	Usage	459	405	419	411	460	11.9
	Discharge	370	352	377	330	401	21.5
Water usage per unit of revenue	[km ³ /billion yen]	4.30	3.14	3.03	2.63	2.93	11.3
Water discharge per unit of revenue	[km ³ /billion yen]	3.47	2.73	2.72	2.11	2.55	20.8
【Outside Japan】							
Tampere Plant (Finland)	Usage	70	50	53	51	39	-23.5
Suzhou Plant (China)	Usage	33	34	44	57	53	-7.0
【Consolidated】							
Total	Usage	562	489	516	519	552	6.4
Water usage per unit of revenue	[km ³ /billion yen]	4.72	3.29	3.19	2.66	2.77	4.3
Water usage per unit of revenue	[km ³ /million \$]	0.53	0.37	0.36	0.30	0.31	4.3

■Prevention of noise, vibration and offensive odor

To protect the living environment of local communities, at each site for manufacturing and R&D, Santen regularly measures and analyzes a variety of indices, such as noise levels, in order to appropriately control and identify pollution levels according to the regulatory standards stipulated in laws and local regulations. As a result, we conform the requirements of laws, regulations and local agreements, with significantly less values.

■Rare flora and fauna protection

When constructing main business sites, Santen are checking the impact, for a habitat for rare flora and fauna protection.

■Environmental conservation activities (in Japan)

Because appropriate forest conservation contributes to not only facilitating the absorption of CO₂ but also maintaining the rich natural environment and headwater conservation capacity, leading to the protection of biodiversity, Santen engages in forest conservation activities.

-Obtaining a certification under the Ishikawa Satoyama-zukuri ISO system

Ishikawa Prefecture has established the Ishikawa Satoyama-zukuri ISO system, whereby the prefecture certifies activities by companies, regional organizations, NPOs, schools, etc. to conserve satoyama and satoumi (forests and seas used and maintained by local communities). As part of its efforts to "pass on a beautiful planet to the generations that

follow," Santen obtained a certification under the system in May 2015 to conserve satoyama and satoumi with abundant blessings in Ishikawa. In FY2016, we participated in a tree planting event.

-Supporting the environmental education project at Mt. Hodatsu

Santen supports the Environmental Education Project to conserve nature at Mt. Hodatsu, organized by the board of education of Hodatsu-shimizu Town, the local government of the area where our Noto Plant is located. Santen employees participate in the project as helpers by leading local students in mountain climbing and cleaning. Four employees participated in mountain climbing and cleaning in FY2016.

-Participating satoyama forests preservation activities

Santen calls for employees' participation in events held by a Shiga Prefecture-based NPO to offer practical training on the management and use of satoyama forests and other matters. In FY2016, a total of 16 employees participated in four events.

-Supporting the construction of forest seawalls

Santen supports the Chinju no Mori Project, a public interest incorporated foundation, which was established to construct "forest seawalls that protect lives" in coastal areas devastated by tsunamis caused by the Great East Japan Earthquake by building five-meter-tall embankments with a mixture of tsunami debris and earth and planting broadleaved trees on the embankments. We made donations every year from FY2013, contributing to the planting of a total of 500 saplings planted as of FY2016.

-Conducting activities with local communities

To contribute to the cleaning up and beautification of local environments, Santen's offices, laboratories and plants, including the Noto Plant, the Shiga Product Supply Center and the Shimoshinjo Office, conduct clean-up activities in collaboration with local governments and regional organizations. In FY2016, a total of 532 employees participated in these activities.

■Environment-related awards

- February, 2016: President Award of Hokuriku branch (Hokuriku branch of The Japan Electric Association)
- May, 2015: Certification under the Ishikawa Satoyama-zukuri ISO system (Ishikawa pref.)
- January, 2015: the power saving award at the Osaka "Stop Global Warming" (Osaka pref.)
- October, 2014: Environmental Rating (Development Bank of Japan Inc.)
- February, 2014: Excellent Factory award (Hokuriku branch of The Japan Electric Association)
- June, 2013: Environmental Action Award (Ikoma city, Nara pref.)

Environmental accounting (in Japan)

Scope: The cost and effect of Environmental preservation of Santen Group companies in Japan

Period covered: April 1st, 2016 to March 31st, 2017

Reference: Environmental Accounting Guideline (2005 edition, the Ministry of the Environment Japan)

■ Environmental conservation costs

(unit: million yen)

category	Year ended March 31			
	2016		2017	
	Investments	Expenses	Investments	Expenses
Business area costs	8.6	238.0	7.4	209.8
Pollution prevention	6.2	78.2	1.9	62.6
Global environmental conservation	1.5	85.1	4.2	76.7
Resource circulation	0.9	74.8	1.4	70.5
Upstream/downstream costs	—	16.3	—	9.6
Administration costs	—	79.0	—	67.1
R&D costs	—	—	—	—
Social activity costs	—	0.1	—	0.1
Environmental damage costs	—	—	—	16.3
Total	8.6	333.4	7.4	302.8

- Only the cases that can be determined as related to the purpose of environmental conservation are included in the calculation.
- The cost includes the depreciation amount and was accounted for in the same way as the accounting.
- Current investment includes both the investment amount and expense.
- Total number was only a rough estimation because the totals were rounded off.
- The employment cost of the environmental management department and operation and maintenance of the environmental management system was accounted for as administration costs.
- "—" means no cost or no activities.

■ Economic effects of environmental conservation measures

(unit: million yen)

category	Year ended March 31	
	2016	2017
Profits from sales of waste etc	76.1	74.6
Cost reductions	16.0	14.3

- Only economic effects that can be determined with a high degree of certainty are included in the calculation.

category		unit	Year ended March 31		Environmental conservation effect	%Change 2017/2016
			2016	2017		
Energy	Total energy usage	GJ	483,733	503,808	20,075	4
	Electricity	kWh	29,663	31,093	1,431	5
	Gas	km ³	2,797	2,854	57	2
	LPG	tons	5.8	5.3	-0.5	- 9
	Heavy oil	kℓ	1,846	1,928	82	4
	Gasoline	kℓ	1,025	1,009	- 16	- 2
Water resources	Total water usage	km ³	411	460	49	12
	Tap water	km ³	67	70	3	5
	Industrial water	km ³	80	95	15	18
	Well water	km ³	265	295	31	12
Materials	Raw and other materials	tons	4,396	5,025	629	14
Global warming	CO ₂	ktons	23.8	24.5	0.8	3
Atmospheric pollutants	SOx (sulfur oxides)	tons	4.5	2.7	- 1.8	- 41
	NOx (nitrogen oxides)	tons	5.5	5.1	- 0.4	- 7
	Dust	tons	0.6	0.4	- 0.2	- 37
	VOC (volatile organic compounds)	tons	26.5	34.3	7.8	29
Water pollutants	Discharged water	km ³	330	401	71	21
	BOD (biochemical oxygen demand)	tons	2.1	2.7	0.5	25
	COD (chemical oxygen demand)	tons	1.9	5.1	3.3	173
	SS (suspended solids)	tons	4.7	0.4	- 4.4	- 92
Waste materials	Emmitions	tons	2,224	2,398	173	8
	Recycred resources	tons	2,213	2,391	178	8
	Final disposal	tons	0.4	0.3	- 0.1	- 19



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