

Environmental Accounting

Concept of environmental accounting

The Brother Group performs environmental accounting as an effective means to continuously improve the efficiency of environmental management, targeting eight business sites in Japan ("in Japan") and manufacturing facilities outside Japan ("outside Japan"). The Brother Group quantitatively assesses their effects, and then uses the results to plan environmental activities to be carried out the next fiscal year.

Calculation results for FY2018

Presented below are the expenses, investments, and effectiveness of environmental activities in FY2018 that is the final year of the term, based on the Brother Group Environmental Action Plan 2018 (2016-2018) (the increases and decreases are based on a comparison with the previous fiscal year).

Environmental conservation costs

The Brother Group spent JPY 421 million in Japan (an increase of JPY 75 million) and JPY 95million outside Japan (an increase of JPY 27 million). The total amount was JPY 516 million (an increase of JPY 102 million). Both inside and outside Japan, investments were made mainly to implement energy conservation measures, etc. for conserving the global environment. Expenditures and labor costs for various environmental conservation activities were JPY 913 million (an increase of JPY 98 million) in Japan and JPY 210 million (remain the same as previous year) outside Japan.

In FY2018, about 1.5 million yen was spent separately for the purchase of carbon credits.

Classification of Environmental Conservation Costs		Details of main activities and their effects	Investment (unit: JPY million)		Expenses (unit: JPY million)	
			In Japan	Outside Japan	In Japan	Outside Japan
1. Business area cost	1) Pollution prevention cost	Pollution prevention measures (including air, water, vibration and noise)	1 (-15)	7 (-1)	23 (-15)	90 (-6)
	2) Global environmental conservation cost	Global warming prevention (energy-saving) measures	379 (208)	88 (60)	226 (101)	5 (-9)

	3) Resource circulation cost	Recycling and reduction in waste generation	0 (-2)	0 (-1)	104 (-21)	65 (13)
2. Upstream / downstream cost	Costs incurred to reduce environmental impact when procuring parts and materials and after selling products	Green procurement activities; collection and recycling of used products / consumables	0 (-1)	0 (-31)	88 (17)	0 (0)
3. Administration cost	Costs incurred by activities that contribute indirectly to reducing the environmental impact of business operations	Establishment, administration, and maintenance of the ISO 14001 system; environmental training for employees; disclosure of environmental information; greening and cleanup of manufacturing facilities and their surrounding areas	34 (-109)	0 (0)	317 (11)	33 (1)
4. R&D cost	R&D costs for reducing environmental impact	Development of eco-conscious products and technologies such as energy conservation and resource conservation designs; implementation of product environmental assessments; design improvement	7 (-3)	0 (0)	138 (3)	6 (0)
5. Social activity cost	Costs of environmental conservation that is not directly linked with corporate activities	Support for environmental conservation groups and organizations; support for environmental activities by local citizens; information services	0 (-3)	0 (0)	15 (2)	11 (1)

6. Cost to deal with environmental damage	Costs incurred to restore the natural environment (including soil remediation)	Soil contamination surveys; soil remediation	0 (0)	0 (0)	2 (0)	0 (0)
Total			421 (75)	95 (27)	913 (98)	210 (0)

Figures in parentheses show increases/decreases in the amount from the previous fiscal year.

Environmental conservation effects

Energy input decreased 4.8% in Japan, and increased 2.1% outside Japan.

Water consumption increased 4.5% in Japan and decreased 17.0% outside Japan, resulting in an overall decrease of 14.7%. The decrease of outside Japan leads to a huge change due to production transfer and manufactured product changes.

The CO₂ emissions decreased by 7.3% in Japan and increased by 7.0% outside Japan. The total CO₂ emissions increased by 2.8%.

In FY2018, carbon credits for 1,500t were purchased separately to cover the increase in CO₂ emissions in Japan.

Content of environmental conservation effects		Classification of index to measure environmental conservation effects		In Japan	Outside Japan	
Effects resulting from business area cost	Effects related to resource input into business operations	Total energy input	(kL: converted into crude oil quantity)	10,406 (-523)	26,960 (552)	
		Water input	m ³	92,265 (3,943)	597,718 (-122,699)	
	Effects related to environmental impact and waste released from business operations	Release into the atmosphere from energy use	CO ₂ (t-CO ₂ /year) * from energy use	Based on the emission factors of the international standards	21,426 (-1,685)	59,649 (3,911)
			NO _x (kg/year)		2,316 (-88)	4,967 (-573)
			SO _x (kg/year)		11 (0)	93 (-32)
	Generation of waste	Generation of waste		1,762 (-9)	8,683 (1,511)	
		Landfill waste (t)		0 (0)	136 (15)	

Figures in parentheses show increases/decreases in the amount from the previous fiscal year.

*: Since FY2016 (April 1, 2016-March 31, 2017), the CO₂ emissions from energy use have been calculated based on the emission factors of the international standards. For electricity, emission factors of respective countries released by the International Energy Agency (IEA) are used. For fuel, emission factors of respective countries released by the GHG Protocol are used. The values calculated using the conventional emission factors are also indicated for reference. The values calculated based on the international standards have been increased by more than 40% compared to the conventional values.

Economic effects derived from environmental conservation measures*

The main economic effects were reduction in waste treatment costs due to resource saving and recycling in Japan, and reduction in energy cost due to energy conservation measures and operating income from the recycling of waste outside Japan.

Content of economic effects		In Japan (unit: JPY million)	Outside Japan (unit: JPY million)
Income	Operating income from recycling of waste generated from main business operations	4.8 (-0.7)	63.6 (3.4)
	Reduction in energy cost by energy saving	11.3 (-6.2)	88.0 (7.8)
Cost reduction	Reduction in waste treatment cost due to resource saving and recycling	35.7 (3.2)	106.2 (87.1)
	Publicity effects, such as newspaper reporting, calculated in terms of advertising expenses	2.6 (1.8)	0.3 (-0.1)
Total		54.4 (-1.9)	258.1 (98.2)

Figures in parentheses show increases/decreases in the amount from the previous fiscal year.

*: Economic effects derived from environmental conservation measures are those that can be calculated in monetary terms from among the effects derived from the environmental conservation activities. Effects that cannot be calculated based on solid grounds (i.e., assumed effects and accidental effects) are not calculated.

Scope of aggregation

8 domestic business facilities (Head Office, Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility,*1 Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center*1 Brother Industries (U.K.) Ltd., Brother Industries (Slovakia) s.r.o., Taiwan Brother Industries, Ltd., Zhuhai Brother Industries, Co., Ltd., Brother Machinery Xian Co., Ltd., Brother Technology (Shenzhen) Ltd.,*3 Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Machinery Vietnam Co., Ltd., Brother Industries (Philippines), Inc.

*1: For Logistics Center, only "Environmental Conservation Effects" was aggregated.

*2: Current Brother Industries (Shenzhen), Ltd.

Environmental Accounting (Detailed Data: FY2014-FY2018)

Environmental Conservation Effects

Content of Environmental Conservation Effects		Classification of Index to Measure Environmental Conservation Effects		In Japan					Outside Japan				
				FY2014	FY2015	FY2016	FY2017	FY2018	FY2014	FY2015	FY2016	FY2017	FY2018
Effects resulting from business area cost	Effects related to resource input into business operations	Total energy input	(kL: converted into crude oil quantity)	10,483	10,116	10,231	10,929	10,406	18,838	18,820	23,515	26,408	26,960
		Water input	m ³	101,060	93,989	87,772	88,322	92,265	663,961	698,704	703,515	720,417	597,718
	Effects related to environmental impact and waste released from business operations	Release into the atmosphere from energy use	CO ₂ (t-CO ₂ /year)	15,659	15,117	22,298	23,111 ¹⁾	21,426	31,085	30,993	55,741	55,738 ¹⁾	59,649
			NOx (kg/year)	2,046	2,020	2,155	2,404	2,316	3,603	2,894	5,276	5,540	4,967
			SOx (kg/year)	8	8	8	11	11	88	72	123	125	93
	Generation of waste	Amount of waste generation (t)	2,302	1,998	1,702	1,772	1,762	4,851	5,766 ²⁾	6,105	7,172	8,683	
		Landfill waste (t)	0	0	0	0	0	2	1	121	121	136	

¹⁾ In FY2016, the CO₂ emission factors were changed from the values in accordance with the Act on Promotion of Global Warming Countermeasures to the values based on the international standards. The calculated values for FY2017 using the emission factors of the Act were 16,318 in Japan and 39,659 outside Japan.

²⁾ For Brother Industries (Philippines), Inc., some wastes were found to have been omitted from the scope of aggregation in FY2015. Thus, the amount of waste generation for FY2015 has been updated.

Economic Effects Derived from Environmental Conservation Measures

Unit: millions of Yen

Content of Economic Effects		In Japan					Outside Japan				
		FY2014	FY2015	FY2016	FY2017	FY2018	FY2014	FY2015	FY2016	FY2017	FY2018
Income	Operating income from recycling of waste generated from main business operations	6.9	2.9	2.5	5.5	4.8	55.6	81.3	46.6	60.2	63.6
Cost reduction	Reduction in energy cost by energy-saving	3.0	8.2	18.0	17.5	11.3	25.3	12.8	20.6	80.2	88.0
	Reduction in waste treatment cost due to resource-saving and recycling	31.7	27.6	32.9	32.5	35.7	11.3	29.7	24.8	19.1	106.2
Other	Publicity effects, such as newspaper reporting, calculated in terms of advertising expenses	2.3	3.1	1.4	0.8	2.6	17.2	13.9	0.4	0.4	0.3
Total		43.9	41.8	54.8	56.3	54.4	109.4	137.7	92.4	159.9	258.1

Environmental Conservation Costs

Unit: millions of Yen

Classification of Environmental Conservation Costs		Details of Main Implementation and the Effects		In Japan									
				Investment Amount					Expense Amount				
				FY2014	FY2015	FY2016	FY2017	FY2018	FY2014	FY2015	FY2016	FY2017	FY2018
1. Business area costs: Costs for reducing direct environmental impacts occurring within the facility area		124	141	332	189	380	168	208	342	288	353		
Breakdown:	(1) Pollution prevention cost	4	24	2	16	1	20	21	25	38	23		
	(2) Global environmental conservation cost	120	117	329	171	379	63	83	160	125	226		
	(3) Resource circulation cost	0	0	1	2	0	85	104	157	125	104		
2. Upstream/downstream cost: Costs incurred to reduce environmental impact when procuring parts and materials and after selling products		0	0	0	1	0	95	89	60	71	88		
3. Administration cost: Costs incurred by activities that contribute indirectly to reducing the environmental impact of business operations		155	33	101	143	34	358	329	349	306	317		
4. R&D cost: R&D costs for reducing environmental impact		58	10	12	10	7	145	152	149	135	138		
5. Social activity cost: Costs of environmental conservation that is not directly linked with corporate activities		0	0	0	3	0	13	12	10	13	15		
6. Cost to deal with environmental damage: Costs incurred to restore the natural environment (including soil remediation)		0	0	0	0	0	3	4	3	2	2		
Total		337	184	445	346	421	782	794	913	815	913		

Unit: millions of Yen

Classification		Details of Main Implementation and the Effects		Outside Japan									
				Investment Amount					Expense Amount				
				FY2014	FY2015	FY2016	FY2017	FY2018	FY2014	FY2015	FY2016	FY2017	FY2018
1. Business area costs: Costs for reducing direct environmental impacts occurring within the facility area		137	115	42	37	95	165	237	119	162	160		
Breakdown:	(1) Pollution prevention cost	0	49	6	8	7	84	86	66	96	90		
	(2) Global environmental conservation cost	137	66	36	28	88	25	92	15	14	5		
	(3) Resource circulation cost	0	0	0	1	0	56	59	38	52	65		
2. Upstream/downstream cost: Costs incurred to reduce environmental impact when procuring parts and materials and after selling products		0	0	0	31	0	2	15	0	0	0		
3. Administration cost: Costs incurred by activities that contribute indirectly to reducing the environmental impact of business operations		0	0	0	0	0	55	35	31	32	33		
4. R&D cost: R&D costs for reducing environmental impact		0	0	0	0	0	0	4	5	6	6		
5. Social activity cost: Costs of environmental conservation that is not directly linked with corporate activities		0	0	0	0	0	11	4	3	10	11		
6. Cost to deal with environmental damage: Costs incurred to restore the natural environment (including soil remediation)		0	0	0	0	0	0	0	0	0	0		
Total		137	115	42	68	95	233	295	158	210	210		

Scope of aggregation

Fiscal Year	Target Period	Name of Site	
		In Japan	Outside Japan
FY2014	April 1, 2014–March 31, 2015	Head office, Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, ¹⁾ Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center ²⁾	Brother Industries (U.K.) Ltd., Brother Industries (Slovakia) s.r.o., Taiwan Brother Industries, Ltd., Zhuhai Brother Industries, Co., Ltd., Brother Machinery Xian Co., Ltd., Brother Industries (Shenzhen), Ltd., Brother Technology (Shenzhen) Ltd., Brother Industries Technology (M) Sdn. Bhd., ²⁾ Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Machinery Vietnam Co., Ltd.
FY2015	April 1, 2015–March 31, 2016	Head office, Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, ¹⁾ Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center ²⁾	Brother Industries (U.K.) Ltd., Brother Industries (Slovakia) s.r.o., Taiwan Brother Industries, Ltd., Zhuhai Brother Industries, Co., Ltd., Brother Machinery Xian Co., Ltd., Brother Industries (Shenzhen), Ltd., Brother Technology (Shenzhen) Ltd., Brother Industries Technology (M) Sdn. Bhd., ²⁾ Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Machinery Vietnam Co., Ltd., Brother Industries (Philippines), Inc.
FY2016	April 1, 2016–March 31, 2017	Head office, Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, ¹⁾ Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center ²⁾	Brother Industries (U.K.) Ltd., Brother Industries (Slovakia) s.r.o., Taiwan Brother Industries, Ltd., Zhuhai Brother Industries, Co., Ltd., Brother Machinery Xian Co., Ltd., Brother Industries (Shenzhen), Ltd., ³⁾ Brother Technology (Shenzhen) Ltd., ³⁾ Brother Industries Technology (M) Sdn. Bhd., ^{2,4)} Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Machinery Vietnam Co., Ltd., Brother Industries (Philippines), Inc.
FY2017	April 1, 2017–March 31, 2018	Head office, Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, ¹⁾ Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center ²⁾	Brother Industries (U.K.) Ltd., Brother Industries (Slovakia) s.r.o., Taiwan Brother Industries, Ltd., Zhuhai Brother Industries, Co., Ltd., Brother Machinery Xian Co., Ltd., Brother Technology (Shenzhen) Ltd., ³⁾ Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Machinery Vietnam Co., Ltd., Brother Industries (Philippines), Inc.
FY2018	April 1, 2018–March 31, 2019	Head office, Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, ¹⁾ Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center ²⁾	Brother Industries (U.K.) Ltd., Brother Industries (Slovakia) s.r.o., Taiwan Brother Industries, Ltd., Zhuhai Brother Industries, Co., Ltd., Brother Machinery Xian Co., Ltd., Brother Technology (Shenzhen) Ltd., ³⁾ Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Machinery Vietnam Co., Ltd., Brother Industries (Philippines), Inc.

¹⁾ The Minato Manufacturing Facility stopped production on September 30, 2017.

²⁾ For Logistics Center and Brother Industries Technology (M) Sdn. Bhd. in FY2016, only "Environmental Conservation Effects" was aggregated.

³⁾ Brother Industries (Shenzhen), Ltd. was subject to an absorption-type merger in October 2016, with Brother Technology (Shenzhen) Ltd. as the surviving company.

⁴⁾ Brother Industries Technology (M) Sdn. Bhd. terminated its business operations on March 31, 2017.