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 FY2022

These are the expenses, investments, and effects of environmental activities in FY2022 (April 1, 2022–March 31, 2023) which is the first year in the Brother Group Environmental Action Plan 2024 (2022–2024) (the increases/decreases are based on comparisons with the previous fiscal year).

Environmental conservation costs

The Brother Group invested JPY 191 million in Japan (a decrease of JPY 282 million) and JPY 78 million outside Japan (an increase of JPY 9 million). The total amount was JPY 269 million (a decrease of JPY 273 million). In Japan, investments were made mainly to conserve the global environment, such as for implementing energy conservation measures. Outside Japan, investments were also made mainly to conserve the global environment, including for measures to prevent pollution and conserve energy.
Expenditures and labor costs for various environmental conservation activities were JPY 1,195 million in Japan (an increase of JPY 110 million) and JPY 482 million outside Japan (an increase of JPY 253 million).
In FY2022, approximately JPY 41 million was spent on the procurement of renewable electricity and the purchase of non-fossil certificates and green energy certificates, both in Japan and overseas. Also, the purchase of CO_2 absorption forest credit "Gifu Forestry Association's Profit-Sharing Afforestation Land Thinning Promotion Project" - The Clear Water Country Gifu Development Project - continued.

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 costs	Pollution prevention measures (including air, water, vibration and noise)	2 (1)	39 (4)	20 (3)	120 (18)
	2) Global environmental conservation costs	Global warming prevention (energy-saving) measures	179 (-139)	39 (5)	317 (72)	212 (189)
	3) Resource circulation costs	Recycling and reduction in waste generation	0 (-53)	0 (0)	110 (-1)	86 (34)
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 (0)	0 (0)	92 (7)	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	3 (-90)	0 (0)	273 (7)	58 (11)
4. R&D cost	R&D costs for reducing environmental impact	Development of eco-conscious products and technologies that help mitigate climate change such as energy saving and resource conservation designs; implementation and design improvement of product environmental assessments	7 (-1)	0 (0)	354 (14)	0 (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 (0)	0 (0)	26 (8)	6 (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)	3 (0)	0 (0)
Total			191 (-282)	78 (9)	1,195 (110)	482 (253)

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

Environmental conservation effects

Energy input increased 2.6% in Japan and increased 0.3% outside Japan.

Water consumption increased 11.7% in Japan and decreased 6.6% outside Japan, resulting in an overall decrease of 4.0%.

CO_2 emissions decreased 1.0% in Japan and increased 12.2% outside Japan, resulting in an overall increase of 8.6%.

The significant increase in CO_2 emissions outside of Japan is due to the deteriorating emission coefficient of the electricity purchased.

In FY2022, 10 tons of carbon credits for forest absorption were purchased.

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	Energy input	(kL: converted into crude oil quantity)	11,054 (279)	25,190 (68)
		Water input	m^3	85,755 (8,968)	446,417 (-31,322)
	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 international standards	20,449 (-205)	61,595 (6,718)
			NO_X (kg/year)	2,920 (483)	3,837 (-248)
			SO_X (kg/year)	13 (2)	186 (-11)
		Generation of waste	Generation of waste	1,956 (13)	7,494 (920)
			Landfill waste (t)	0 (0)	227 (53)

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

*: Since April 1st 2016, the CO_2 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 each country released by the GHG Protocol are used.

Economic effects derived from environmental conservation measures*

The main economic effects were reduction in waste treatment costs mainly due to recycling in Japan, and operating income from the waste recycling and reduction in energy cost due to energy conservation measures 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	14.5 (0)	176.4 (62)
Cost reduction	Reduction in energy cost by energy saving	36.9 (22)	58.7 (16)
	Reduction in waste treatment cost due to resource conservation and recycling	39.3 (2)	599.2 (521)
Other	Publicity effects, such as newspaper reporting, calculated in terms of advertising expenses	42.0 (24)	0.3 (0)
Total		132.7 (49)	834.6 (599)

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
Eight business sites in Japan (head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, Momozono Manufacturing Facility, Kariya Manufacturing Facility, Research & Development Center, Logistics Center*), 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., Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., and Brother Industries (Philippines), Inc.

*: For Logistics Center, only “Environmental conservation effects” was aggregated.

Environmental Accounting (Detailed Data: FY2018-FY2022)

Environmental Conservation Effects

Content of Environmental Conservation Effects		Classification of Index to Measure Environmental Conservation Effects		In Japan					Outside Japan				
				FY2018	FY2019	FY2020	FY2021	FY2022	FY2018	FY2019	FY2020	FY2021	FY2022
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	9,849	10,169	10,775	11,054	26,960	24,214	23,392	25,122	25,190
		Water input	m^3	92,265	83,049	80,331	76,787	85,755	597,718	504,594	454,540	477,739	446,417
	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	21426	20,434	20,299	20,654	20,449	59649	50,777	47,112	54,876	61,595
			NOx (kg/year)	2,316	2,165	2,208	2,437	2,920	4,967	3,789	3,438	4,085	3,837
			SOx (kg/year)	11	11	11	11	13	93	73	142	197	186
		Generation of waste	Amount of waste generation (t)	1,762	1,658	1,668	1,944	1,956	8,683	7,936	6,832	6,575	7,494
			Landfill waste (t)	0	0	0	0	0	136	110	123	174	227

*1: In FY2016, the CO_2 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.

Economic Effects Derived from Environmental Conservation Measures

Unit: millions of Yen

Content of Economic Effects		In Japan					Outside Japan				
		FY2018	FY2019	FY2020	FY2021	FY2022	FY2018	FY2019	FY2020	FY2021	FY2022
Income	Operating income from recycling of waste generated from main business operations	4.8	2.8	3.2	14.3	14.5	63.6	58.6	51.6	114.0	176.4
Cost reduction	Reduction in energy cost by energy-saving	11.3	11.4	10.3	15.2	36.9	88.0	90.1	121.9	43.2	58.7
	Reduction in waste treatment cost due to resource-saving and recycling	35.7	32.1	34.3	37.0	39.3	106.2	87.5	167.1	78.3	599.2
Other	Publicity effects, such as newspaper reporting, calculated in terms of advertising expenses	2.6	4.7	15.4	17.6	42.0	0.3	0.2	0.2	0.2	0.3
Total		54.4	51.0	63.2	84.1	132.7	258.1	236.4	340.8	235.7	834.6

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				
			FY2018	FY2019	FY2020	FY2021	FY2022	FY2018	FY2019	FY2020	FY2021	FY2022
1. Business area costs: Costs for reducing direct environmental impacts occurring within the facility area			380	218	258	372	181	353	387	385	373	447
Breakdown:	(1) Pollution prevention cost	Pollution prevention measures (including air, water, vibration and noise)	1	0	0	1	2	23	22	21	17	20
	(2) Global environmental conservation cost	Global warming prevention (energy-saving) measures	379	218	257	318	179	226	259	259	245	317
	(3) Resource circulation cost	Recycling and reduction in waste generation	0	0	1	53	0	104	106	105	111	110
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	35	1	0	0	88	84	82	85	92
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	28	43	93	3	317	296	288	266	273
4. R&D cost: R&D costs for reducing environmental impact		Development of eco-conscious products and technologies that help mitigate climate change such as energy conservation and resource conservation designs; implementation of product environmental assessments; design improvement	7	18	42	8	7	138	131	151	340	354
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	0	0	0	0	15	20	22	18	26
6. Cost to deal with environmental damage: Costs incurred to restore the natural environment (including soil remediation)		Soil contamination surveys; soil remediation	0	0	5	0	0	2	2	4	3	3
Total			421	299	349	473	191	913	920	932	1085	1,195

Unit: millions of Yen

Classification		Details of Main Implementation and the Effects	Outside Japan									
			Investment Amount					Expense Amount				
			FY2018	FY2019	FY2020	FY2021	FY2022	FY2018	FY2019	FY2020	FY2021	FY2022
1. Business area costs: Costs for reducing direct environmental impacts occurring within the facility area			95	58	257	69	78	160	133	144	177	418
Breakdown:	(1) Pollution prevention cost	Pollution prevention measures (including air, water, vibration and noise)	7	23	148	35	39	90	70	75	102	120
	(2) Global environmental conservation cost	Global warming prevention (energy-saving) measures	88	35	109	34	39	5	7	23	23	212
	(3) Resource circulation cost	Recycling and reduction in waste generation	0	0	0	0	0	65	56	46	52	86
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	0	0	0	0	0	0	0	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	0	0	0	0	0	33	32	35	47	58
4. R&D cost: R&D costs for reducing environmental impact		Development of eco-conscious products and technologies that help mitigate climate change such as energy conservation and resource conservation designs; implementation of product environmental assessments; design improvement	0	0	0	0	0	6	6	0	0	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	0	0	0	0	11	10	4	5	6
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	0	0	0	0	0	0
Total			95	58	257	69	78	210	181	183	229	482

Scope of aggregation

Fiscal Year	Target Period	Name of Site	
		In Japan	Outside Japan
FY2018	April 1, 2018–March 31, 2019	Head office, Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, 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., Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Machinery Vietnam Co., Ltd.*2, Brother Industries (Philippines), Inc.
FY2019	April 1, 2019–March 31, 2020	Head office, Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, 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., Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Machinery Vietnam Co., Ltd.*2, Brother Industries (Philippines), Inc.
FY2020	April 1, 2020–March 31, 2021	Head office, Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, 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., Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Industries (Philippines), Inc.
FY2021	April 1, 2021–March 31, 2022	Head office, Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, 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., Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Industries (Philippines), Inc.
FY2022	April 1, 2022–March 31, 2023	Head office, Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, 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., Brother Industries (Vietnam) Ltd., Brother Industries Saigon, Ltd., Brother Industries (Philippines), Inc.

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

*2: Brother Machinery Vietnam Co., Ltd. ceased production on December 23, 2020.