



Material Balance

Identifying the environmental impact of business operations

The Brother Group's manufacturing facilities are engaged in processing and assembly to manufacture products. The environmental impacts (including resource consumption, CO₂ emissions, and waste generated) associated with all business operations are quantitatively monitored and summarized to reduce environmental impacts.

Resource Utilization and Material Production/Emissions in FY2020 (April 1, 2020–March 31, 2021)

Resource and energy inputs in FY2020

Resource consumption		Total energy consumption		Water consumption	
Product raw materials (t)	194,922	Crude petroleum equivalent (kL)	42,031	Total amount of water consumption (m ³)	591,596

Material production/emissions in FY2020

CO ₂ emissions		Wastewater volume		Amount of waste	
Greenhouse gas emissions (t-CO ₂ e)	83,822	Wastewater volume (m ³)	519,704	Production-related waste (t)	11,469
		Volume recycled (m ³)	3,759	Volume recycled (t)	9,983
		Recycling rate (%)	0.72	Rate of landfill waste (%)	1.07

The scope of aggregation was directly related to the product range.

For the locations of applicable sites and their main lines of business, see page 8.

Calculation method

Resource and energy inputs in FY2020		
Resource consumption	The resource consumption is calculated by multiplying the shipments to main products shipped in FY2020 per weight.	
Total energy consumption	Total amount of electricity, steam, LPG/LNG, city gas, petroleum, etc. consumed at applicable business sites in FY2020	
	Crude petroleum equivalent	<p>Calculated by converting electricity, gasoline, light oil, LPG, city gas, etc., into crude petroleum, respectively</p> <p>*: The conversion rate for crude oil equivalent is based on the Appended Table 1 of the Ordinance for Enforcement of the Act on the Rational Use of Energy enacted by the Japanese Ministry of Economy, Trade and Industry.</p>
Water consumption	Total amount of water consumed at applicable business sites in FY2020	
	Clean water, industrial water, and underground water	Measurement using a water meter

Material production/emissions in FY2020		
CO ₂ emissions	<p>This is calculated using the location-based method, which is a method where calculations are performed based on the grid-average emission factors in a certain area such as a country or region.</p> <p>*: The sources of emission factors for the location-based method are as follows:</p> <ul style="list-style-type: none"> • IEA, "CO₂ Emissions from Fuel Combustion 2018" • GHG Protocol, Calculation Tools • DEFRA 	
Amount of wastewater	The amount is equivalent to the amount of water intake. However, the amount is calculated based on the measured wastewater amount or in accordance with the formula set in respective regions (based on the amount of water intake), if such measured amount or formula is available	
Amount of waste	Production-related waste	Total amount of waste (including metals, waste plastics, circuit boards, sludge, waste oil/solvents, waste acids/alkalis, glass/ ceramics, and batteries) generated in the production process at applicable business sites in FY2020

Environmental impact data of main business sites before FY2019 can be viewed by downloading the PDF file from the sustainability web site.

Environmental impact data of main business sites in FY2020

Resource consumption, Energy consumption

Name of site	Resource consumption (t)	Energy consumption					
		Electricity (MWh)	LPG (t)	City gas (1,000m ³)	Gasoline (kL)	Light oil (kL)	Kerosene (kL)
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, and Logistics Center)	13,829	35,848	0	788	34	4	0
Nissei Corporation	5,952	24,518	11	1,721	20	2	3
Mie Brother Precision Industries, Ltd.	444	496	0	0	1	0	0
Brother Industries (U.K.) Ltd.	809	1,174	0	63	1	0.1	0
Brother Industries (Slovakia) s.r.o.	773	590	0	57	0	7	0
Taiwan Brother Industries, Ltd.	1,274	1,474	6	0	0	0	0
Zhuhai Brother Industries, Co., Ltd.	5,546	2,380	0	0	4	1	0
Brother Machinery Xian Co., Ltd.	9,310	6,076	0	146	0.1	2	0
Brother Technology (Shenzhen) Ltd.	22,018	16,144	0	213	26	34	0
Brother Industries (Philippines), Inc.	26,361	23,078	43	0	0.3	80.2	0
Brother Industries (Vietnam) Ltd.	88,127	29,508	95	0	0	49	0
Brother Machinery Vietnam Co., Ltd.	916	1,929	68	0	0	1	0
Brother Industries Saigon, Ltd	19,562	4,568	0	0	0.2	0.7	0

Greenhouse gas emissions

Name of site	Greenhouse gas emissions (t-CO ₂ e)		
	Scope 1	Scope 2	
		Location-based	Market-based
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, and Logistics Center)	1,576	18,723	16,382
Nissei Corporation	3,345	12,806	11,205
Mie Brother Precision Industries, Ltd.	2	259	227
Brother Industries (U.K.) Ltd.	121	288	434
Brother Industries (Slovakia) s.r.o.	160	94	0
Taiwan Brother Industries, Ltd.	18	919	786
Zhuhai Brother Industries, Co., Ltd.	11	1,482	1,482
Zhuhai Brother Industries, Co., Ltd.	282	3,784	3,784
Brother Technology (Shenzhen) Ltd.	718	10,053	10,053
Brother Industries (Philippines), Inc.	346	15,435	20,858
Brother Industries (Vietnam) Ltd.	445	10,632	10,632
Brother Machinery Vietnam Co., Ltd.	205	695	695
Brother Industries Saigon, Ltd	2	1,646	1,646

Water intake, wastewater volume, volume of water recycled

Name of site	Water intake (m ³)			Wastewater volume (m ³)			Volume of water recycled (m ³)	Percent of water recycled (%)
	Clean water	Industrial water	Under-ground water	River	Sewer system	Others		
Eight business sites in Japan (head office of Brother Industries, Ltd., Mizuho Manufacturing Facility, Hoshizaki Manufacturing Facility, Minato Manufacturing Facility, Momozono Manufacturing Facility, Research & Development Center, and Logistics Center)	57,482	0	4,547	0	62,029	146	0	0.0
Eight business sites in Japan (Manufacturing Facility, Kariya)	17,313	0	989	17,313	0	989	0	0.0
Nissei Corporation	55,562	0	0	0	21,345	0	0	0.0
Mie Brother Precision Industries, Ltd.	61	0	1,102	1,163	0	0	0	0.0
Brother Industries (U.K.) Ltd.	1,608	0	0	0	1,608	0	0	0.0
Brother Industries (Slovakia) s.r.o.	0	0	2,551	0	2,551	0	0	0.0
Taiwan Brother Industries, Ltd.	12,146	0	0	0	6,167	0	0	0.0
Zhuhai Brother Industries, Co., Ltd.	58,315	0	0	0	52,484	0	0	0.0
Brother Machinery Xian Co., Ltd.	25,130	0	0	0	19,662	0	51	0.3
Brother Technology (Shenzhen) Ltd. Baolong Manufacturing Facility	70,456	0	0	0	70,456	0	1,700	2.4
Brother Technology (Shenzhen) Ltd. Nanwan Manufacturing Facility	29,419	0	0	29,419	0	0	0	0.0
Brother Industries (Philippines), Inc.	0	0	78,285	0	66,542	0	0	0.0
Brother Industries (Vietnam) Ltd.	131,887	0	0	131,887	0	0	1,930	1.4
Brother Machinery Vietnam Co., Ltd.	5,618	0	0	0	4,602	42	78	1.7
Brother Industries Saigon, Ltd	39,125	0	0	0	31,300	0	0	0.0

Water pollution load

Name of site	Water pollution load (mg/L)			
	BOD	COD	N- hexane extracts	SS
Eight business sites in Japan (Hoshizaki Manufacturing Facility)	52.1	-	2.1	-
Eight business sites in Japan (Kariya Manufacturing Facility)	3.2	7.3	<1	5.9
Eight business sites in Japan (Logistics Center)	7.1	-	1.0	-
Nissei Corporation	139.9	-	0.0	3.8
Mie Brother Precision Industries, Ltd.	3.0	10.0	ND	11.0
Brother Industries (U.K.) Ltd.	-	-	-	-
Brother Industries (Slovakia) s.r.o.	3.8	13.0	-	<5
Taiwan Brother Industries, Ltd.	2.3	21.8	-	14.5
Zhuhai Brother Industries, Co., Ltd.	4.1	14.5	-	10.5
Brother Machinery Xian Co., Ltd.	14.7	46.0	0.4	14.3
Brother Technology (Shenzhen) Ltd. Baolong Manufacturing Facility	86.1	310.3	-	135.0
Brother Technology (Shenzhen) Ltd. Nanwan Manufacturing Facility	8.0	30.3	-	9.3
Brother Industries (Philippines), Inc.	261.3	558.2	8.9	72.5
Brother Industries (Vietnam) Ltd.	4.0	15.0	0.5	<10
Brother Machinery Vietnam Co., Ltd.	-	-	-	-
Brother Industries Saigon, Ltd	51.5	121.0	-	-

No data for Brother Machinery Vietnam Co., Ltd. as it ceased operations in December 2020.

Waste amount

Target: Reduction in waste amount compared to the previous FY

Actual: Reduction of 12,963 tons compared to 1,494 tons in the previous FY

Name of site	Waste amount						
	Production-related waste (t)	Material recycling (t)	Thermal recycling (t)	Incineration amount (t)	Other disposal amount (t)	Amount of landfill waste (t)	Rate of landfill waste (%)
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, and Logistics Center)	2,020	1,773	240	6	0	0	0.0
Nissei Corporation	2,603	1,802	797	0	5	0	0.0
Mie Brother Precision Industries, Ltd.	109	61	48	0	0	0	0.0
Brother Industries (U.K.) Ltd.	290	276	14	0	0	0	0.0
Brother Industries (Slovakia) s.r.o.	684	577	107	0	0	0	0.0
Taiwan Brother Industries, Ltd.	826	26	0	28	722	0	0.0
Zhuhai Brother Industries, Co., Ltd.	171	149	0	21	1	0.3	0.2
Brother Machinery Xian Co., Ltd.	283	165	0	71	47	0	0.0
Brother Technology (Shenzhen) Ltd.	275	272	3	0	0	0	0.0
Brother Industries (Philippines), Inc.	1,022	899	0	0	0	122.8	12.0
Brother Industries (Vietnam) Ltd.	2,447	2,171	0	275	1	0	0.0
Brother Machinery Vietnam Co., Ltd.	121	26	9	16	71	0	0.0
Brother Industries Saigon, Ltd	620	570	0	50	0	0	0.0

To help use resources effectively and prevent resource depletion, the Brother Group ensures activities are carried out to curb waste generation, reduce emissions, and achieve "zero landfill waste" (meaning that less than 1% of waste generated at manufacturing facilities is sent to landfill).

Location and main line of business of applicable sites

Name of site	Location	Main line of business (as of March 31, 2021)
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, and Logistics Center)	Nagoya, Aichi Prefecture (various locations)	[Mizuho Manufacturing Facility] Research and development of telecommunication/printing equipment, electronic stationery, and home sewing machines, [Hoshizaki Manufacturing Facility] Prototype production of printer heads, [Momozono Manufacturing Facility and Research & Development Center] Research and development, [Kariya Manufacturing Facility] Production of electronic stationery, garment printers, and machine tools
Nissei Corporation	Anjo, Aichi Prefecture	Manufacture and sales of speed reducers, small gears, and die-cast products; and lease of real estate properties (including condominiums)
Mie Brother Precision Industries, Ltd.	Taki-gun, Mie Prefecture	Production of consumables for online karaoke equipment, mobile printers, electronic stationery, etc.; recycling of toner cartridges; product repair services
Brother Industries (U.K.) Ltd.	Wales, U.K.	Production of consumables for printers, All-in-Ones, etc.
Brother Industries (Slovakia) s.r.o.	Krupina, Slovakia	Production of consumables for printers, All-in-Ones, etc.
Taiwan Brother Industries, Ltd.	Kaohsiung, Taiwan	Production of home sewing machines
Zhuhai Brother Industries, Co., Ltd.	Zhuhai, Guangdong, China	Production of electronic stationery, scanners, industrial printing equipment, etc.
Brother Machinery Xian Co., Ltd.	Xian, Shaanxi, China	Production of industrial sewing machines and machine tools
Brother Technology (Shenzhen) Ltd.: Baolong Manufacturing Facility, Nanwan Manufacturing Facility	Shenzhen, Guangdong, China	Production of printers and All-in-Ones
Brother Industries (Philippines), Inc.	Batangas, the Philippines	Production of printers, All-in-Ones, and electronic stationery
Brother Industries (Vietnam) Ltd.	Hai Duong Province, Vietnam	Production of printers and All-in-Ones
Brother Machinery Vietnam Co., Ltd.	Hai Duong Province, Vietnam	Production of industrial sewing machines
Brother Industries Saigon, Ltd.	Dong Nai Province, Vietnam	Production of home sewing machines