

# Ajinomoto Group Sustainability Data Book 2019

## Appendix 1 : Environmental Data

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- Reduction of greenhouse gas emissions
- Conservation of water resources
- 3Rs of waste

### Scope of the Environmental Data

The environmental data of this section covers Ajinomoto Co., Inc. and other group companies subject to the Ajinomoto Group Environmental Management as defined in the company's Environmental Regulations as of March 31, 2019. Performance statistics are for the 125 major business sites (3 reduced following site reorganization as well as factory dissolution and new construction), which substantially represent the environmental performance of the entire Ajinomoto Group under the consolidated financial accounting system.

## Environmental Data

### Reduction of greenhouse gas emissions

■ Total greenhouse gas emissions calculated using applicable IEA (International Energy Agency) CO<sub>2</sub> emission factors

(tons)

	FY2014	FY2015	FY2016	FY2017	FY2018
<b>Scope 1 emissions</b>	1,167,816	1,251,654	1,270,429	1,244,676	1,196,969
Japan	264,381	319,751	345,958	361,142	327,345
Asia/Africa	494,811	528,823	550,319	519,025	526,405
Europe	47,782	63,300	48,589	46,282	39,021
North America	170,837	188,438	204,301	228,284	219,337
South America	161,780	123,918	99,319	66,896	67,231
China	28,225	27,424	21,943	23,047	17,629
<b>Scope 2 emissions (market-based method)</b>	1,143,380	1,101,529	1,121,770	1,072,248	1,015,723
Japan	138,555	138,341	143,670	136,505	141,952
Asia/Africa	415,330	427,826	415,967	441,259	427,389
Europe	259,453	176,291	210,988	182,140	184,253
North America	202,341	248,114	235,069	213,247	193,766
South America	74,185	66,905	62,139	60,420	40,308
China	53,516	44,052	53,937	38,677	28,056
<b>Scope 1,2 emissions</b>	2,311,196	2,353,183	2,392,199	2,316,924	2,212,692
Japan	402,936	458,092	489,628	497,647	469,297
Asia/Africa	910,141	956,649	966,286	960,284	953,794
Europe	307,235	239,591	259,577	228,422	223,275
North America	373,178	436,552	439,370	441,531	413,103
South America	235,965	190,823	161,458	127,316	107,538
China	81,741	71,476	75,880	61,724	45,686
<b>Scope 1 emissions</b>	-	-	1,270,429	1,244,676	1,196,969
Business activities					
Production	-	-	-	-	974,641
Transportation	-	-	-	-	25,976
Others (office, sales, R&D, etc.)	-	-	-	-	196,352
Business division					
Food products	-	-	333,215	344,819	347,927
AminoScience	-	-	937,214	899,857	849,041
<b>Scope 2 emissions (market-based method)</b>	-	-	1,121,769	1,072,248	1,015,723
Business activities					
Production	-	-	-	-	821,352
Transportation	-	-	-	-	9
Others (office, sales, R&D, etc.)	-	-	-	-	194,362
Business division					
Food products	-	-	311,526	323,576	379,571
AminoScience	-	-	810,243	748,672	636,152

## Environmental Data

### Total greenhouse gas emissions calculated based on internal CO<sub>2</sub> emission factors

	FY2005 (Base Year)	FY2014	FY2015	FY2016	FY2017	FY2018
Greenhouse gas emissions (kilo tons)	2,357	2,211	2,234	2,330	2,299	2,310
Greenhouse gas emission volume vs. emission intensity (per ton of product)	1.31	0.94	0.88	0.88	0.86	0.88
Reduction rate	-	28%	33%	33%	35%	33%
Reference value: Total amount of production (kilo tons)	1,800	2,347	2,532	2,657	2,684	2,627

### Ajinomoto Group products carbon footprint

Product	Production plant	CFP values <sup>[1]</sup> (per kg of product)	CFP values per serving <sup>[2]</sup>
(1) HON-DASHI®	Kawasaki Plant, Ajinomoto Food Manufacturing Co., Ltd.	14.08 kg-CO <sub>2</sub> e	-
(2) Ajinomoto ㊦ Consommé (Granules)	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	6.87 kg-CO <sub>2</sub> e	-
(3) Knorr® Cup Soup Tsubu Tappuri Corn Cream	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	7.08 kg-CO <sub>2</sub> e	-
(4) Ajinomoto ㊦ Shirogayu 250 g	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	0.81 kg-CO <sub>2</sub> e	-
(5) Cook Do® Hoikoro	Kawasaki Plant, Ajinomoto Food Manufacturing Co., Ltd.	2.95 kg-CO <sub>2</sub> e	1.21 kg-CO <sub>2</sub> e per serving (approx. 700 g)
(6) Cook Do® Kyo-no Oozara Butabara Daikon	Shizuoka Plant, Ajinomoto Food Manufacturing Co., Ltd.	2.31 kg-CO <sub>2</sub> e	2.90 kg-CO <sub>2</sub> e per serving (approx. 1 kg)
(7) Nabe Cube Toridashi Umashio	Kunneppu Plant, Ajinomoto Food Manufacturing Hokkaido Co., Ltd.	8.54 kg-CO <sub>2</sub> e	-
(8) Blendy® Stick Café au Lait (coffee mixes)	AGF Suzuka, Inc.	4.85 kg-CO <sub>2</sub> e	-
(9) Lemon and Basil Fried Chicken (frozen foods)	Kyushu Plant, Ajinomoto Frozen Foods Co., Inc.	5.84 kg-CO <sub>2</sub> e	-
(10) Yamaki Mentsuyu (400ml and 500ml)	Daini Plant and Minakami Plant, YAMAKI Co., Ltd.	2.02 kg-CO <sub>2</sub> e	-
(11) Masako® Ayam (11g)	Mojokerto Factory, PT Ajinomoto Indonesia	2.49 kg-CO <sub>2</sub> e	-
(12) Aji-ngon® Pork flavor seasoning (400g)	Long Thanh Factory, Ajinomoto Vietnam Co., Ltd.	2.68 kg-CO <sub>2</sub> e	-
(13) Ros Dee® Pork (75g)	Nong Khai Factory, Ajinomoto Thailand Co., Ltd.	3.15 kg-CO <sub>2</sub> e	-

[1] Carbon footprint (CFP) values in the report are calculated in accordance with PCR No. PA-CG-02 from the Japan Environmental Management Association for Industry. The calculation system and the results are backed by a third-party assurance statement from Lloyd's Register Quality Assurance Limited, based on the ISO/TS 14067 standard.

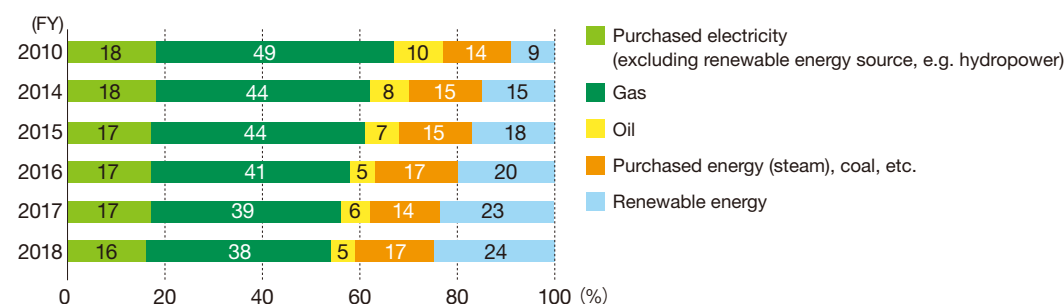
[2] CFP values of ingredients including vegetables and meat are included.

### Energy input

	FY2014	FY2015	FY2016	FY2017	FY2018
Energy input (TJ) <sup>[3]</sup>	36,356	37,362	39,105	39,589	38,468
Energy input intensity of production (per tonne of product)	15.5	14.8	14.7	14.8	14.6

[3] TJ: terajoule, T (tera) = 10<sup>12</sup>. The joule conversion factors officially published in 2005 have been used.

### Energy use (thermal equivalent)



## Environmental Data

### Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions (tons)

	FY2018
NOx	9,421
SOx	10,701
Soot and dust	1,827
CFCs, HCFCs, HFCs	11

## Conservation of water resources

### Water use

(kilo tons)

	FY2005 (Base Year)	FY2014	FY2015	FY2016	FY2017	FY2018
<b>Total water withdrawal <sup>[1]</sup></b>	221,863	78,653	76,912	74,041	74,844	69,892
Fresh surface water	180,363	28,422	25,272	23,559	24,433	20,672
Brackish surface water/ seawater	0	0	0	0	0	0
Fresh groundwater-renewable	0	0	0	0	0	0
Fresh groundwater-non-renewable	-	16,293	16,972	15,859	16,371	15,076
Produced water	0	0	0	0	0	0
Municipal water (including industrial water)	41,500	33,938	34,668	34,623	34,041	34,144
<b>Water usage vs. production volume unit (per ton of product)</b>	123	34	30	28	28	27
Reduction rate	-	73%	75%	77%	77%	78%
Reference value: Production volume	1,800	2,347	2,532	2,657	2,684	2,627
<b>Total water discharge</b>	201,300	66,386	60,873	59,701	60,464	55,800
Fresh surface water	53,000	29,897	27,418	27,419	29,813	29,231
Brackish surface water/ seawater	0	0	0	0	0	0
Groundwater	0	0	0	0	0	0
Third-party destinations	4,300	9,224	10,171	9,909	9,827	9,540
<b>Total water use recycled or reused</b>	144,000	27,265	23,284	22,373	20,824	17,029
<b>Proportion of water use recycled or reused</b>	65%	35%	30%	30%	28%	24%
<b>Total water use</b>	20,563	12,267	16,039	14,340	14,380	14,092
<b>BOD (tons)</b>	550	304	268	269	294	312
<b>Nitrogen (tons)</b>	3,200	404	424	445	394	501

[1] Water withdrawals are disclosed based on volumes measured/invoiced in accordance with national or regional laws or converted from pump power use/pipe water speed. Water discharge volume and quality are both disclosed based on accumulated values measured in accordance with national or regional law.

## Environmental Data

### 3Rs of waste

#### Volume of waste and by-products and resource recovery ratio

(tons)

	FY2014	FY2015	FY2016	FY2017	FY2018
<b>Hazardous waste (waste acid, waste alkali, waste oil, cinder)</b>					
Generation	60,304	60,431	59,217	59,162	69,991
Recycling	59,719	59,457	58,890	58,862	68,422
Incineration	35	14	54	24	40
Landfill	550	959	274	276	1,529
<b>Non-hazardous waste</b>					
<b>By-products</b>					
Generation	2,295,432	2,435,544	2,337,284	2,395,249	2,194,566
Composting	2,293,952	2,434,281	2,335,451	2,394,976	2,194,470
Incineration	144	0	0	0	0
Landfill	1,336	1,263	1,832	273	96
<b>Others</b>					
Generation	132,462	140,464	178,861	178,989	174,651
Recycling	123,330	131,258	163,414	161,455	153,388
Incineration	1,116	1,293	3,021	2,066	2,821
Landfill	8,016	7,913	12,426	15,467	18,442
<b>Total generation</b>	<b>2,488,199</b>	<b>2,636,439</b>	<b>2,575,361</b>	<b>2,633,400</b>	<b>2,439,208</b>
<b>Total recycling</b>	<b>2,477,001</b>	<b>2,624,997</b>	<b>2,557,755</b>	<b>2,615,293</b>	<b>2,416,280</b>
<b>Total waste</b>	<b>11,197</b>	<b>11,442</b>	<b>17,606</b>	<b>18,107</b>	<b>22,928</b>
<b>Resource recovery ratio</b>	<b>99.5%</b>	<b>99.6%</b>	<b>99.3%</b>	<b>99.3%</b>	<b>99.1%</b>