

Ajinomoto Group Sustainability Data Book 2020

Appendix 1 : Environmental Data

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

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, 2020. Performance statistics are for the 128 major business sites (3 increased following site reorganization), which substantially represent the environmental performance of the entire Ajinomoto Group under the consolidated financial accounting system.

Reduction of greenhouse gas emissions

Total greenhouse gas emissions calculated using applicable IEA (International Energy Agency) CO₂ emission factors

(t-CO₂e)

	FY2015	FY2016	FY2017	FY2018	FY2019
Scope 1 emissions	1,251,654	1,270,429	1,244,676	1,196,969	1,013,315
Japan	319,751	345,958	361,142	327,345	302,700
Asia/Africa	528,823	550,319	519,025	526,405	376,020
Europe	63,300	48,589	46,282	39,021	41,463
North America	188,438	204,301	228,284	219,337	212,796
South America	123,918	99,319	66,896	67,231	65,408
China	27,424	21,943	23,047	17,629	14,926
Scope 2 emissions (market-based method)	1,101,529	1,121,770	1,072,248	1,015,723	960,375
Japan	138,341	143,670	136,505	141,952	118,337
Asia/Africa	427,826	415,967	441,259	427,389	414,365
Europe	176,291	210,988	182,140	184,253	171,196
North America	248,114	235,069	213,247	193,766	194,490
South America	66,905	62,139	60,420	40,308	38,306
China	44,052	53,937	38,677	28,056	23,681
Scope 1,2 emissions	2,353,183	2,392,199	2,316,924	2,212,692	1,973,690
Japan	458,092	489,628	497,647	469,297	421,038
Asia/Africa	956,649	966,286	960,284	953,794	790,386
Europe	239,591	259,577	228,422	223,275	212,659
North America	436,552	439,370	441,531	413,103	407,286
South America	190,823	161,458	127,316	107,538	103,714
China	71,476	75,880	61,724	45,686	38,608
Scope 1 emissions	-	1,270,429	1,244,676	1,196,969	1,013,315
Business activities					
Production	-	-	-	974,641	804,553
Transportation	-	-	-	25,976	16,060
Others (office, sales, R&D, etc.)	-	-	-	196,352	192,702
Business division					
Food products	-	333,215	344,819	347,927	338,518
AminoScience	-	937,214	899,857	849,041	674,797
Scope 2 emissions (market-based method)	-	1,121,769	1,072,248	1,015,723	960,375
Business activities					
Production	-	-	-	821,352	802,117
Transportation	-	-	-	9	2
Others (office, sales, R&D, etc.)	-	-	-	194,362	158,257
Business division					
Food products	-	311,526	323,576	379,571	356,388
AminoScience	-	810,243	748,672	636,152	603,988

Environmental Data

Total greenhouse gas emissions calculated based on internal CO₂ emission factors

	FY2005 (Base Year)	FY2015	FY2016	FY2017	FY2018	FY2019
Greenhouse gas emissions (kilo tons)	2,357	2,234	2,330	2,299	2,310	2,017
Greenhouse gas emission volume vs. emission intensity (per ton of product)	1.31	0.88	0.88	0.86	0.88	0.80
Reduction rate	-	33%	33%	35%	33%	39%
Reference value: Total amount of production (kilo tons)	1,800	2,532	2,657	2,684	2,627	2,512

Ajinomoto Group products carbon footprint

Product	Production plant	CFP values ^[1] (per kg of product)	CFP values per serving ^[2]
(1) HON-DASHI®	Kawasaki Plant, Ajinomoto Food Manufacturing Co., Ltd.	14.08 kg-CO ₂ e	-
(2) Ajinomoto ㄐㄐ Consommé (Granules)	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	6.87 kg-CO ₂ e	-
(3) Knorr® Cup Soup Tsubu Tappuri Corn Cream	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	7.08 kg-CO ₂ e	-
(4) Ajinomoto ㄐㄐ Shirogayu 250 g	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	0.81 kg-CO ₂ e	-
(5) Cook Do® Hoikoro	Kawasaki Plant, Ajinomoto Food Manufacturing Co., Ltd.	2.95 kg-CO ₂ e	1.21 kg-CO ₂ 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 ₂ e	2.90 kg-CO ₂ e per serving (approx. 1 kg)
(7) Nabe Cube Toridashi Umashio	Kunneppu Plant, Ajinomoto Food Manufacturing Hokkaido Co., Ltd.	8.54 kg-CO ₂ e	-
(8) Blendy® Stick Café au Lait (coffee mixes)	AGF Suzuka, Inc.	4.85 kg-CO ₂ e	-
(9) Lemon and Basil Fried Chicken (frozen foods)	Kyushu Plant, Ajinomoto Frozen Foods Co., Inc.	5.84 kg-CO ₂ e	-
(10) Yamaki Mentsuyu (400ml and 500ml)	Daini Plant and Minakami Plant, YAMAKI Co., Ltd.	2.02 kg-CO ₂ e	-
(11) Masako® Ayam (11g)	Mojokerto Factory, PT AJINOMOTO INDONESIA	2.49 kg-CO ₂ e	-
(12) Aji-ngon® Pork flavor seasoning (400g)	Long Thanh Factory, AJINOMOTO VIETNAM CO., LTD.	2.68 kg-CO ₂ e	-
(13) Ros Dee® Pork (75g)	Nong Khae Factory, AJINOMOTO CO. (THAILAND) LTD.	3.15 kg-CO ₂ 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.

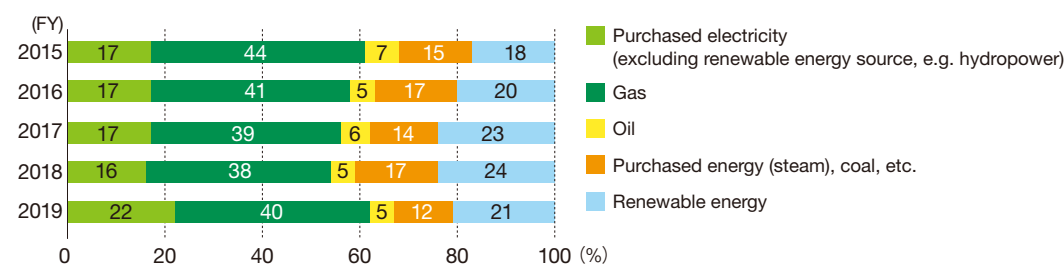
Energy input

	FY2015	FY2016	FY2017	FY2018	FY2019
Energy input (TJ) ^[3]	37,362	39,105	39,589	38,468	34,619
Energy input intensity of production (per kilo tons of product)	14.8	14.7	14.8	14.6	13.8

[3] TJ: terajoule, T (tera) = 10¹². The joule conversion factors officially published in 2005 have been used.

Environmental Data

Energy use (thermal equivalent)



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

(tons)

	FY2018	FY2019
NOx	9,421	5,224
SOx	10,701	6,779
Soot and dust	1,827	884
CFCs, HCFCs, HFCs	11	10

Conservation of water resources

Water use/intensity

(megaliters)

	FY2005 (Base Year)	FY2015	FY2016	FY2017	FY2018	FY2019
Total water withdrawal ^[1]	221,863	76,912	74,041	74,844	69,892	66,926
Fresh surface water	180,363	25,272	23,559	24,433	20,672	19,630
Brackish surface water/ seawater	0	0	0	0	0	0
Fresh groundwater-renewable	0	0	0	0	0	0
Fresh groundwater-non-renewable	-	16,972	15,859	16,371	15,076	14,366
Produced water	0	0	0	0	0	0
Municipal water (including industrial water)	41,500	34,668	34,623	34,041	34,144	32,930
Water usage vs. production volume unit (per ton of product)	123	30	28	28	27	27
Reduction rate	-	75%	77%	77%	78%	78%
Reference value: Production volume (kilo tons)	1,800	2,532	2,657	2,684	2,627	2,512
Total water discharge	201,300	60,873	59,701	60,464	55,800	52,342
Fresh surface water	47,000	26,059	25,872	28,341	27,498	24,297
Brackish surface water/ seawater	0	0	0	0	0	0
Groundwater	0	0	0	0	0	0
Third-party destinations	10,300	11,530	11,456	11,299	11,273	11,291
Total water use recycled or reused	144,000	23,284	22,373	20,824	17,029	16,754
Proportion of water use recycled or reused	65%	30%	30%	28%	24%	25%
Total water use	20,563	16,039	14,340	14,380	14,092	14,584
BOD (tons)	550	268	269	294	312	283
Nitrogen (tons)	3,200	424	445	394	501	506

[1] We disclose water withdrawal based on measurements or invoiced volumes according to the applicable national or local laws. We may also disclose water withdrawal based on a volume conversion from pump power use or pipe water speed. We disclose water discharge volume and quality based on values collated from measurements based on applicable national or local laws.


3Rs of waste

Volume of waste and by-products and resource recovery ratio

(tons)

	FY2015	FY2016	FY2017	FY2018	FY2019
Hazardous waste (waste acid, waste alkali, waste oil, cinder)					
Generated	60,431	59,217	59,162	69,991	83,834
Recycled	59,457	58,890	58,862	68,422	83,429
Incinerated	14	54	24	40	60
Landfills	959	274	276	1,529	345
Non-hazardous waste					
By-products					
Generated	2,435,544	2,337,284	2,395,249	2,194,566	2,021,002
Composted	2,434,281	2,335,451	2,394,976	2,194,470	2,020,885
Incinerated	0	0	0	0	0
Landfills	1,263	1,832	273	96	117
Others					
Generated	140,464	178,861	178,989	174,651	181,246
Recycled	131,258	163,414	161,455	153,388	156,432
Incinerated	1,293	3,021	2,066	2,821	2,121
Landfills	7,913	12,426	15,467	18,442	22,693
Total generated	2,636,439	2,575,361	2,633,400	2,439,208	2,286,082
Total recycled	2,624,997	2,557,755	2,615,293	2,416,280	2,260,745
Total waste	11,442	17,606	18,107	22,928	25,337
Resource recovery ratio	99.6%	99.3%	99.3%	99.1%	98.9%

Third-party assurance



LR Independent Assurance Statement

Relating to Ajinomoto Group Sustainability Data Book 2020 for the fiscal year 2019

This Assurance Statement has been prepared for AJINOMOTO Co., Inc. in accordance with our contract but is intended for the readers of this Report.

Terms of engagement
Lloyd's Register Quality Assurance (LR) was commissioned by AJINOMOTO Co., Inc. ("the Company") to provide independent assurance on its Environmental and Social data within Ajinomoto Group Sustainability Data Book 2020 ("the report") for the fiscal year 2019 (from 1 April 2019 to 31 March 2020), against the assurance criteria below to a limited level of assurance and at the materiality of the professional judgement of the verifier using ISAE 3000 and ISO 14064-3 for GHG emissions data.

Our assurance engagement covered the Company's operations and activities in Japan and overseas and specifically the following requirements:

- Verifying conformance with the Company's reporting methodologies for the selected dataset;
- Evaluating the accuracy and reliability of data for the selected environmental and social indicators listed below:¹
 - Scope 1 GHG emissions² (tonnes CO₂e)
 - Scope 2 GHG emissions, market based, and location based² (tonnes CO₂e)
 - Scope 3 GHG emissions associated with Categories 1 to 15² (tonnes CO₂e)
 - Lost Time Injury Frequency Rate (LTIFR)
 - Occupational Illness Frequency Rate (OIFR)

Our assurance engagement excluded the data and information of the Company's suppliers, contractors and any third-parties mentioned in the report.

LR's responsibility is only to the Company. LR disclaims any liability or responsibility to others as explained in the end footnote. The Company's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the report and for maintaining effective internal controls over the systems from which the report is derived. Ultimately, the report has been approved by, and remains the responsibility of the Company.

LR's Opinion
Based on LR's approach nothing has come to our attention that would cause us to believe that the Company has not, in all material respects:

- Met the requirements above
- Disclosed accurate and reliable performance data

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of the professional judgement of the verifier.


Note: The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

LR's approach
LR's assurance engagements are carried out in accordance with ISAE3000 and ISO14064-3 for GHG emissions. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Auditing the Company's data management systems to confirm that there were no significant errors, omissions or mis-statements in the report. We did this by reviewing the effectiveness of data handling procedures, instructions and systems, including those for internal verification.

¹ GHG quantification is subject to inherent uncertainty.

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- Interviewing with key people responsible for compiling the data and drafting the report.
- Sampling datasets and tracing activity data back to aggregated levels;
- Verifying the historical GHG emissions, Lost Time Injury Frequency Rate (LTIFR) and Occupational Illness Frequency Rate (OIFR) data and records for the fiscal year 2019; and
- Using by the Information and Communication Technology (ICT) for Delica Ace Co., Ltd Ageo Factory and Ajinomoto Food Manufacturing CO., Ltd Kawasaki Factory and visiting the head office of the Company to investigate whether the data management systems have been effectively implemented.

Observations
The Company should continue efforts for implementing quality assurance and quality control (QA/QC) systems for the GHG emissions, energy consumption and water consumption data management. This is particular to ensuring effective internal verification processes at both the corporate and member company levels.

LR's standards, competence and independence
LR implements and maintains a comprehensive management system that meets accreditation requirements for ISO 14065 Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition and ISO/IEC 17021-1 Conformity assessment – Requirements for bodies providing audit and certification of management systems – Part1: Requirements that are at least as demanding as the requirements of the International Standard on Quality Control 1 and comply with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants.

LR ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

The verification and certification assessments are the only work undertaken by LR for the Company and as such do not compromise our independence or impartiality.

Signed _____ Dated: 13 June 2020

Takahiro Ito
LR Lead Verifier
On behalf of Lloyd's Register Quality Assurance Limited
10th Floor, Queen's Tower A, 2-3-1 Minatomirai, Nishi-ku, Yokohama, JAPAN

LR reference: YKA4005113

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