

Ajinomoto Group Sustainability Data Book 2021

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, 2021. Performance statistics are for the 146 (Expanded the target business sites from those with CO₂ emissions to all business sites.), which substantially represent the environmental performance of the entire Ajinomoto Group under the consolidated financial accounting system.

Environmental Data

Reduction of greenhouse gas emissions

Greenhouse gas emissions calculated from IEA^[1] CO₂ emissions factors

(t-CO₂e)

By region	FY2016	FY2017	FY2018	FY2019	FY2020
Scope 1 emissions	1,270,429	1,244,676	1,196,969	1,013,315	1,008,811
Japan	345,958	361,142	327,345	302,700	293,358
Asia/Africa	550,319	519,025	526,405	376,020	389,741
Europe	48,589	46,282	39,021	41,463	37,902
North America	204,301	228,284	219,337	212,796	221,691
South America	99,319	66,896	67,231	65,408	53,877
China	21,943	23,047	17,629	14,926	12,242
Scope 2 emissions (market-based method)	1,121,770	1,072,248	1,015,723	960,375	901,789
Japan	143,670	136,505	141,952	118,337	120,119
Asia/Africa	415,967	441,259	427,389	414,365	380,604
Europe	210,988	182,140	184,253	171,196	158,749
North America	235,069	213,247	193,766	194,490	179,067
South America	62,139	60,420	40,308	38,306	32,692
China	53,937	38,677	28,056	23,681	30,558
Scope 1 and 2 total emissions	2,392,199	2,316,924	2,212,692	1,973,690	1,910,600
Japan	489,628	497,647	469,297	421,038	413,477
Asia/Africa	966,286	960,284	953,794	790,386	770,346
Europe	259,577	228,422	223,275	212,659	196,651
North America	439,370	441,531	413,103	407,286	400,758
South America	161,458	127,316	107,538	103,714	86,569
China	75,880	61,724	45,686	38,608	42,799

[1] International Energy Agency

(t-CO₂e)

By business activity/division ^[2]	FY2016	FY2017	FY2018	FY2019	FY2020	
Scope 1 emissions	1,270,429	1,244,676	1,196,969	1,013,315	1,008,811	
Business activities	Production	-	-	1,149,384	976,078	970,831
	Transportation	-	-	25,976	16,060	17,633
	Others (office, sales, R&D, etc.)	-	-	21,609	21,177	20,348
Business division	Food products	333,215	344,819	347,927	338,518	436,813
	AminoScience	937,214	899,857	849,041	674,797	571,998
Scope 2 emissions (market-based method)	1,121,769	1,072,248	1,015,723	960,375	901,789	
Business activities	Production	-	-	1,010,908	955,202	897,639
	Transportation	-	-	9	2	2
	Others (office, sales, R&D, etc.)	-	-	4,806	5,172	4,148
Business division	Food products	311,526	323,576	379,571	356,388	384,066
	AminoScience	810,243	748,672	636,152	603,988	517,722

[2] Figures of business activities of fiscal 2018 and fiscal 2019 were revised due to incorrect classification.

Greenhouse gas emissions per volume unit calculated from IEA CO₂ emissions factors

	FY2016	FY2017	FY2018	FY2019	FY2020
Scope 1 and 2 emissions per volume unit (intensity per ton of product)	0.90	0.86	0.84	0.79	0.79
Reference value: Production volume (1,000 t)	2,657	2,684	2,627	2,512	2,423
Scope 1 and 2 emissions per volume unit (intensity per million yen sales)	-	-	1.99	1.79	1.78
Consolidated sales (million yen)	-	-	1,114,308	1,100,039	1,071,453

Environmental Data

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 (400 ml and 500 ml)	Daini Plant and Minakami Plant, YAMAKI Co., Ltd.	2.02 kg-CO ₂ e	-
(11) Masako® Ayam (11 g)	Mojokerto Factory, PT AJINOMOTO INDONESIA	2.49 kg-CO ₂ e	-
(12) Aji-ngon® Pork flavor seasoning (400 g)	Long Thanh Factory, AJINOMOTO VIETNAM CO., LTD.	2.68 kg-CO ₂ e	-
(13) Ros Dee® Pork (75 g)	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.

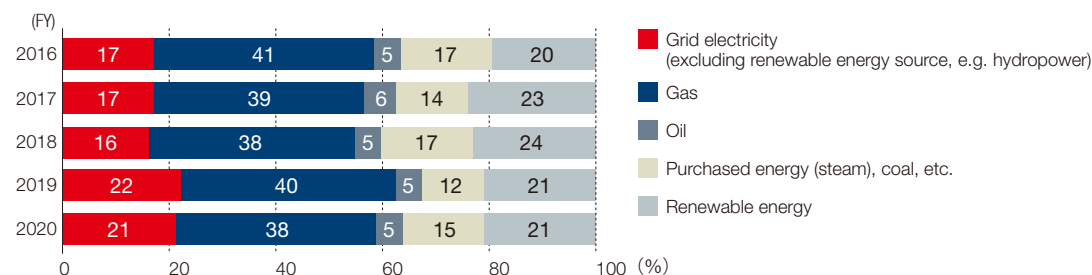
[2] CFP values of ingredients including vegetables and meat are included.

Energy input

	FY2016	FY2017	FY2018	FY2019	FY2020
Energy input (TJ) ^[3]	39,105	39,589	38,468	34,619	33,494
Energy input intensity of production (per kilo tons of product)	14.7	14.8	14.6	13.8	13.8

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

Composition of consumed energy (thermal equivalent)



Environmental Data

NOx and other atmospheric emissions

(tons)

	FY2018	FY2019	FY2020
Nitrogen oxide (NOx)	9,421	5,224	6,637
Sulfur oxide (SOx)	10,701	6,779	7,016
Particulates	1,827	884	1,310
CFCs	11	9 ^[1]	7

[1] The figure has been revised because CFC, HCFC, and HFC have been redefined to exclude non-fluorocarbons such as natural refrigerants.

Conservation of water resources

Water use/intensity

(1,000 kl)

	FY2005 (Base Year)	FY2016	FY2017	FY2018	FY2019	FY2020
Total water withdrawal ^[2]	221,863	74,041	74,844	69,892	66,926	64,406
Fresh surface water	180,363	23,559	24,433	20,672	19,630	17,004
Brackish surface water/ seawater	0	0	0	0	0	0
Fresh groundwater, renewable	0	0	0	0	0	0
Fresh groundwater, non-renewable	-	15,859	16,371	15,076	14,366	13,041
Produced water	0	0	0	0	0	0
Municipal water (including industrial water)	41,500	34,623	34,041	34,144	32,930	34,361
Water consumption per production volume unit (intensity per ton of product)	123	28	28	27	27	27
Reduction rate (vs. FY2005)	-	77%	77%	78%	78%	78%
Ref.: Total amount of production (1,000 t)	1,800	2,657	2,684	2,627	2,512	2,423
Total water discharge	201,300	59,701	60,464	55,800	52,342	51,564
Fresh surface water (processed by the Group) ^[3]	47,000	25,872	28,341	27,498	24,297	24,088
Brackish surface water/ seawater	0	0	0	0	0	0
Groundwater	0	0	0	0	0	0
Third-party destinations ^[3]	10,300	11,456	11,299	11,273	11,291	11,139
Total water recycled or reused	144,000	22,373	20,824	17,029	16,754	16,338
Proportion of water recycled or reused	65%	30%	28%	24%	25%	25%
Total water consumption	20,563	14,340	14,380	14,092	14,584	12,842
BOD (tons)	550	269	294	312	283	284
Nitrogen (tons)	3,200	445	394	501	506	583

[2] 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.

[3] Data of fiscal 2005, 2016-2019 are recalculated due to change of definition.

Environmental Data


3Rs of waste

Volume of waste and by-products and resource recovery ratio

(tons)

	FY2016	FY2017	FY2018	FY2019	FY2020
Hazardous waste (waste acid, waste alkali, waste oil, cinder)					
Generated	59,217	59,162	69,991	83,834	81,216
Recycled	58,890	58,862	68,422	83,429	80,892
Incinerated	54	24	40	60	38
Landfills	274	276	1,529	345	286
Non-hazardous waste					
By-products					
Generated	2,337,284	2,395,249	2,194,566	2,021,002	1,615,808
Composted	2,335,451	2,394,976	2,194,470	2,020,885	1,615,713
Incinerated	0	0	0	0	0
Landfills	1,832	273	96	117	95
Other					
Generated	178,861	178,989	174,651	181,246	173,310
Recycled	163,414	161,455	153,388	156,432	150,295
Incinerated	3,021	2,066	2,821	2,121	1,784
Landfills	12,426	15,467	18,442	22,693	21,231
Total generated	2,575,361	2,633,400	2,439,208	2,286,082	1,870,334
Total recycled	2,557,755	2,615,293	2,416,280	2,260,745	1,846,900
Total waste	17,606	18,107	22,928	25,337	23,434
Resource recovery ratio	99.3%	99.3%	99.1%	98.9%	98.7%

Third-party assurance



LR Independent Assurance Statement

Relating to Ajinomoto Co., Inc.'s Environmental and Social Data within Ajinomoto Group Sustainability Data Book 2021 for the fiscal year 2020

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 2021 ("the report") for the fiscal year 2020 (from 1 April 2020 to 31 March 2021), 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 15 (tonnes CO₂e)
 - Lost Time Injury Frequency Rate (LTIFR)³
 - Occupational Illness Frequency Rate (OIFR)³

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 environmental and social 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.

¹ GHG quantification is subject to inherent uncertainty.
² Scope 1 and Scope 2 GHG emissions cover only energy-oriented CO₂ at Manufacture sites.
³ Including office work only sites.

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

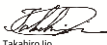
- Auditing the Company's data management systems to confirm that there were no significant errors, omissions or mis-statements in the report. We did this by reviewing the effectiveness of data handling procedures, instructions and systems, including those for internal verification.
- Interviewing with 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 associated records for the fiscal year 2020; and
- By implementing a "No Visitor" Policy due to the global infection spread of COVID-19, conducting the remote verification to Shizuoka Factory of Ajinomoto Food Manufacturing Co., Ltd. and Osaka Factory of AJINOMOTO FROZEN FOOD Co., Inc. for confirming the effectiveness of its data management system via emails, telephone, and Skype for Business. The data for the all sites was reviewed at the head office of AJINOMOTO Co., Inc..

Observations
The company is expected to continue its efforts for implementing quality assurance and quality control (QA/QC) systems in data and information management. At that time, this is particular to ensure 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 – Part 1: 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: 
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

Dated: 13 June 2021

LR reference: YKA4005113

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