Ajinomoto Group Sustainability Report 2024
Appendix 1 : Environmental Data

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, 2024. Performance statistics are for the 138, which substantially represent the environmental performance of the entire Ajinomoto Group under the consolidated financial accounting system.

Reduction of greenhouse gas emissions

Greenhouse gas emissions calculated from IEA[1] CO_2 emissions factors

($t\text{-}CO_2e$)

	FY2018 (Base Year)	FY2019	FY2020	FY2021	FY2022	FY2023
Scope 3 Category 1: Raw materials	8,115,946	7,784,783	7,614,734	6,960,412	6,610,392	6,494,563
Scope 1:	1,196,969	1,013,315	1,008,811	1,005,363	973,780	767,084
Scope 3 Category 3: Production	381,765	625,142	630,823	583,499	604,719	587,760
Scope 2:	Market-based method 1,015,723 Location-based method 1,026,764	Market-based method 960,375 Location-based method 978,066	Market-based method 901,789 Location-based method 910,791	Market-based method 606,594 Location-based method 622,059	Market-based method 611,712 Location-based method 620,751	Market-based method 512,652 Location-based method 516,707
Scope 3 Category 4: Transport	1,274,589	1,256,044	1,210,741	1,121,673	1,037,133	981,743
Scope 3 Category 11: Use	1,294,392	1,353,234	1,355,477	1,396,947	1,386,049	1,296,947
Scope 3 Category 12: Disposal	443,333	431,048	425,003	409,500	405,337	400,585
Scope 3 Category 2: Capital goods	249,944	255,910	262,711	232,674	219,172	241,466
Scope 3 Category 5: Waste generated in operations	140,678	85,666	85,714	92,884	97,854	82,326
Scope 3 Category 6: Business travel	4,479	4,486	4,226	4,350	4,446	4,500
Scope 3 Category 7: Employee commuting	16,206	16,231	15,292	15,740	16,087	16,283
Scope 3 Category 8: Upstream leased assets	Included in category 1	Included in category 1	Included in category 1	Included in category 1	Included in category 1	Included in category 1
Scope 3 Category 9: Downstream transportation and distribution	3,780	3,503	3,183	3,448	2,535	2,802
Scope 3 Category 10: Processing of sold products	8,158	5,517	179,801	126,716	108,585	78,445
Scope 3 Category 13: Downstream leased assets	0	0	0	0	0	0
Scope 3 Category 14: Franchises	0	0	0	0	0	0
Scope 3 Category 15: Investments	0	0	0	0	0	0
Scope 3 total	11,933,270	11,821,564	11,787,705	10,947,844	10,492,309	10,187,420
Scope 1, 2 and 3 total	14,145,962	13,795,254	13,698,305	12,599,801	12,077,801	11,467,156

($t\text{-}CO_2e$)

By region	FY2018 (Base Year)	FY2019	FY2020	FY2021	FY2022	FY2023
Scope 1 emissions	1,196,969	1,013,315	1,008,811	1,005,363	973,780	767,084
Japan	327,345	302,700	293,358	288,531	279,268	260,444
Asia/Africa	526,405	376,020	389,741	412,339	394,705	225,598
Europe	39,021	41,463	37,902	18,721	15,824	15,381
North America	219,337	212,796	221,691	206,394	210,282	203,728
South America	67,231	65,408	53,877	67,975	63,998	50,201
China	17,629	14,926	12,242	11,402	9,704	11,731
Scope 2 emissions (market-based method)	1,015,723	960,375	901,789	606,594	611,712	512,652
Japan	141,952	118,337	120,119	101,645	92,886	66,036
Asia/Africa	427,389	414,365	380,604	276,867	308,580	262,446
Europe	184,253	171,196	158,749	20,451	19,161	19,052
North America	193,766	194,490	179,067	170,258	159,857	137,049
South America	40,308	38,306	32,692	6,753	2,646	203
China	28,056	23,681	30,558	30,620	28,582	27,867
Scope 1 and 2 total emissions	2,212,692	1,973,690	1,910,600	1,611,957	1,585,492	1,279,736
Japan	469,297	421,038	413,477	390,177	372,154	326,480
Asia/Africa	953,794	790,386	770,346	689,205	703,286	488,044
Europe	223,275	212,659	196,651	39,172	34,985	34,433
North America	413,103	407,286	400,758	376,652	370,139	340,777
South America	107,538	103,714	86,569	74,729	66,644	50,405
China	45,686	38,608	42,799	42,022	38,286	39,598

[1] International Energy Agency

(t-CO_2e)

By business activity/division		FY2018 (Base Year)	FY2019	FY2020	FY2021	FY2022	FY2023
Scope 1 emissions		1,196,969	1,013,315	1,008,811	1,005,363	973,780	767,084
Business activities	Production	1,149,384	976,078	970,831	974,789	932,429	740,452
	Transportation	25,976	16,060	17,633	12,524	24,732	9,674
	Others (office, sales, R&D, etc.)	21,609	21,177	20,348	18,050	16,620	16,957
Business division	Food products	347,927	338,518	436,813	485,193	524,660	495,477
	AminoScience	849,041	674,797	571,998	520,170	449,121	271,607
Scope 2 emissions (market-based method)		1,015,723	960,375	901,789	606,594	611,712	512,652
Business activities	Production	1,010,908	955,202	897,639	604,268	609,377	510,224
	Transportation	9	2	2	3	5	3
	Others (office, sales, R&D, etc.)	4,806	5,172	4,148	2,323	2,330	2,425
Business division	Food products	379,571	356,388	384,066	311,163	299,081	268,331
	AminoScience	636,152	603,988	517,722	295,431	312,631	244,321

Greenhouse gas emissions per volume unit calculated from IEA[1] CO_2 emissions factors

	FY2018 (Base Year)	FY2019	FY2020	FY2021	FY2022	FY2023
Scope 1 and 2 emissions per volume unit (intensity per ton of product)	0.84	0.79	0.79	0.68	0.67	0.57
Scope 3 emissions (exclude category 11) per volume unit (intensity per ton of product)	4.54	4.71	4.87	4.64	4.46	4.50
Reference value: Production volume (1,000 t)	2,627	2,512	2,423	2,360	2,350	2,265
Scope 1 and 2 emissions per volume unit (intensity per million yen sales)	1.99	1.79	1.78	1.40	1.17	0.89
Scope 3 emissions per volume unit (intensity per million yen sales)	10.71	10.75	11.00	9.53	7.72	7.08
Consolidated sales (million yen)	1,114,308	1,100,039	1,071,453	1,149,370	1,359,115	1,439,231

[1] International Energy Agency

Ajinomoto Group products carbon footprint

Product	Production plant	CFP values[2] (per kg of product)	CFP values per serving[3]
(1) *HON-DASHI®*	Kawasaki Plant, Ajinomoto Food Manufacturing Co., Ltd.	14.08 kg-CO_2e	-
(2) *Ajinomoto KK Consommé* (Granules)	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	6.87 kg-CO_2e	-
(3) *Knorr® Cup Soup Tsubu Tappuri Corn Cream*	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	7.08 kg-CO_2e	-
(4) *Ajinomoto KK Shirogayu 250 g*	Takatsu Plant, Ajinomoto Food Manufacturing Co., Ltd.	0.81 kg-CO_2e	-
(5) *Cook Do® Hoikoro*	Kawasaki Plant, Ajinomoto Food Manufacturing Co., Ltd.	2.95 kg-CO_2e	1.21 kg-CO_2e per serving (approx. 700 g)
(6) *Cook Do® Kyo-no Oozara Butabara Daikon*	Shizuoka Plant, Ajinomoto Food Manufacturing Co., Ltd.	2.31 kg-CO_2e	2.90 kg-CO_2e per serving (approx. 1 kg)
(7) *Nabe Cube Toridashi Umashio*	Kunneppu Plant, Ajinomoto Food Manufacturing Hokkaido Co., Ltd.	8.54 kg-CO_2e	-
(8) *Blendy® Stick Café au Lait* (coffee mixes)	AGF Suzuka, Inc.	4.85 kg-CO_2e	-
(9) *Lemon and Basil Fried Chicken* (frozen foods)	Kyushu Plant, Ajinomoto Frozen Foods Co., Inc.	5.84 kg-CO_2e	-
(10) *Yamaki Mentsuyu* (400 ml and 500 ml)	Daini Plant and Minakami Plant, YAMAKI Co., Ltd.	2.02 kg-CO_2e	-
(11) *Masako® Ayam* (11 g)	Mojokerto Factory, PT AJINOMOTO INDONESIA	2.49 kg-CO_2e	-
(12) *Aji-ngon® Pork flavor seasoning* (400 g)	Long Thanh Factory, AJINOMOTO VIETNAM CO., LTD.	2.68 kg-CO_2e	-
(13) *Ros Dee® Pork* (75 g)	Nong Khae Factory, AJINOMOTO CO., (THAILAND) LTD.	3.15 kg-CO_2e	-

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

Energy input

	FY2019	FY2020	FY2021	FY2022	FY2023
Energy input (TJ)[1]	34,619	33,494	31,733	32,125	29,364
Energy input intensity of production (per kilo tons of product)	13.8	13.8	13.4	13.7	13.0

[1] TJ: terajoule, T (tera) = 10^{12}. The joule conversion factors officially published in 2005 have been used.

Consumption of consumed energy (thermal equivalent)

	FY2019	FY2020	FY2021	FY2022	FY2023
Grid electricity (excluding renewable energy source, e.g. hydropower)	22%	21%	14%	14%	13%
Gas	40%	38%	38%	37%	43%
Oil	5%	5%	5%	5%	2%
Purchased energy (steam), coal, etc.	12%	15%	13%	12%	4%
Renewable energy (thermal equivalent including fuel)	21%	21%	29%	32%	38%

NOx and other atmospheric emissions

(tons)

	FY2019	FY2020	FY2021	FY2022	FY2023
Nitrogen oxide (NOx)	5,224	6,637	5,673	4,730	3,977
Sulfur oxide (SOx)	6,779	7,016	7,676	5,311	1,068
Particulates	884	1,310	871	3,492	762
CFCs[2]	9	7	5	4	11

[2] Figures exclude natural refrigerants and other non-fluorocarbons due to the redefinition of CFCs, HCFCs, and HFCs.

Conservation of water resources

Water use/intensity

(1,000 kl)

	FY2005 (Base Year)	FY2019	FY2020	FY2021	FY2022	FY2023
Total water withdrawal[3]	221,863	66,926	64,406	59,979	60,039	58,358
Fresh surface water	180,363	19,630	17,004	17,259	17,890	17,520
Brackish surface water/ seawater	0	0	0	0	0	0
Fresh groundwater, renewable	0	14,366	13,041	13,769	13,369	12,507
Fresh groundwater, non-renewable	-	0	0	0	0	0
Produced water	0	0	0	0	0	0
Municipal water (including industrial water)	41,500	32,930	34,361	28,950	28,781	28,332
Water consumption per production volume unit (intensity per ton of product)	123	27	27	25	26	26
Reduction rate (vs. FY2005)	-	78%	78%	79%	79%	79%
Ref. Total amount of production (1,000 t)	1,800	2,512	2,423	2,360	2,354	2,265
Total water discharge[3]	201,300	52,342	51,564	48,034	46,353	45,735
Fresh surface water (processed by the Group)	47,000	24,297	24,088	20,490	19,655	19,048
Brackish surface water/ seawater	0	0	0	0	0	0
Groundwater	0	0	0	0	0	0
Third-party destinations	10,300	11,291	11,139	11,360	11,245	11,049
Total water recycled or reused	144,000	16,754	16,338	16,184	15,453	15,638
Proportion of water recycled or reused	65%	25%	25%	27%	26%	27%
Total water consumption	20,563	14,584	12,842	11,945	13,685	12,623
BOD (tons)[3]	550	283	284	263	269	210
Nitrogen (tons)[3]	3,200	506	583	430	327	303

[3] Water withdrawal is disclosed as the volume measured and invoiced in accordance with the laws of each country and region, or as a converted volume based on pump power use and pipe water speed. Data for quantity and quality of wastewater is aggregated in accordance with the laws of each country and region.

3Rs of waste

Volume of waste and by-products and resource recovery ratio

(tons)

	FY2019	FY2020	FY2021	FY2022	FY2023
Hazardous waste (waste acid, waste alkali, waste oil, cinder)					
Generated	83,834	81,216	83,770	106,161	96,507
Recycled	83,429	80,892	83,399	105,997	96,323
Incinerated	60	38	24	12	105
Landfills	345	286	347	152	78
Non-hazardous waste					
By-products[1]					
Generated	2,021,002	1,615,808	1,546,599	1,470,197	1,386,673
Composted	2,020,885	1,615,713	1,543,988	1,470,110	1,386,659
Incinerated	0	0	0	0	0
Landfills	117	95	2,611	87	15
Other[2]					
Generated	181,246	173,310	195,832	208,120	174,906
Recycled	156,432	150,295	169,243	182,956	155,715
Incinerated	2,121	1,784	2,318	3,969	1,535
Landfills	22,693	21,231	24,271	21,195	17,656
Total generated	2,286,082	1,870,334	1,826,201	1,784,478	1,658,086
Total recycled	2,260,745	1,846,900	1,796,630	1,759,063	1,638,698
Total waste	25,337	23,434	29,571	25,415	19,389
Resource recovery ratio	98.9%	98.7%	98.4%	98.6%	98.8%

[1] Sludge, Bacteria, Humus carbon, Waste activated carbon, Gypsum sludge, Salts, Fermentation final concentrate, Waste filter aide, etc.
[2] Sludge, Animal and plant residues, Plastic wastes, Glass and ceramic wastes, Metal scraps, Paper wastes, Wood wastes, Rubber scraps, Waste construction materials, Office wastes, etc.

Volume of packaging material and resource recovery ratio

(ktons)

	FY2019	FY2020	FY2021	FY2022	FY2023
Wood/Paper fiber	150	150	150	150	149
Recycled and/or certified material ratio	84%	83%	86%	87%	90%
Metal (e.g. aluminum or steel)	13	13	13	14	14
Recycled and/or certified material ratio	-	-	-	-	-
Glass	5.4	6.4	6.6	6.6	6.6
Recycled and/or certified material ratio	-	-	-	-	-
Plastic	71	70	71	69	68
Recyclable plastic ratio	52%	50%	50%	48%	48%
Plastic packaging materials	67	66	66	64	64
Recyclable plastic packaging materials ratio	52%	50%	51%	48%	48%
Compostable plastic packaging materials ratio	0%	0%	0%	0%	0%

Volumes of food loss and waste[3]

(tons)

	FY2018 (Base Year)	FY2019	FY2020	FY2021	FY2022	FY2023
Total generated volume	53,226	46,729	48,901	47,377	43,389	38,186
Total volume used for alternative purposes	25,515	21,222	26,634	28,115	28,222	26,906
Total discarded volume[4]	27,710	25,507	22,267	19,262	15,167	11,279
Total discarded volume per volume unit (intensity per ton of product)	10.6	10.0	9.2	8.2	6.4	5.0
Reference value: Production volume (1,000t)	2,609	2,542	2,423	2,357	2,354	2,265
vs. Fiscal 2018 (%)	-	95%	87%	77%	61%	47%

[3] Measured with reference to the Food Loss & Waste Accounting and Reporting Standard. (Measurement methods may differ between target organizations.)
[4] Refers to the amount of "food loss and waste", which is an indicator of the reduction target. It is calculated by excluding the “total volume used for alternative purposes” from the “total generated volume”.

Third-party assurance

LRQA Independent Assurance Statement

Relating to Ajinomoto Co., Inc.'s Environmental and Social Data within Ajinomoto Group Sustainability Report 2024 for the fiscal year 2023

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 (LRQA) was commissioned by AJINOMOTO Co., Inc. ("the Company") to provide independent assurance on its Environmental and Social data within Ajinomoto Group Sustainability Report 2024 ("the report") for the fiscal year 2023 from 1 April 2023 to 31 March 2024), 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 emissions [2] (tonnes CO_2e)
  - Scope 2 GHG emissions, market-based and location-based [2] (tonnes CO_2e)
  - Scope 3 GHG emissions associated with Categories 1 to 15 (tonnes CO_2e)
  - Lost Time Injury Frequency Rate (LTIFR) [3]

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

LRQA's responsibility is only to the Company. LRQA 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.

LRQA's Opinion

Based on LRQA's approach nothing has come to our attention that would cause us to believe that the Company has not, in all materia LRQA espects:

- 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 CO_2 at Manufacture sites.*
[3] *Including office work only sites.*

LRQA's approach

LRQA'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.
- 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 and Lost Time Injury Frequency Rate (LTIFR) data and associated records for the fiscal year 2023; and
- Verification for confirming of the effectiveness of its data management system of Ajinomoto Food manufacturing Hokkaido Co., Ltd. Tokachi Plant and AJINOMOTO FROZEN FOODS CO., INC. Chiba Plant were conducted by emails and site visit. 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.

LRQA's standards, competence and independence

LRQA 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.

LRQA 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 LRQA for the Company and as such do not compromise our independence or impartiality.

Signed Dated: 26 June 2024

Takahiro Iio
LRQA Lead Verifier
On behalf of LRQA Limited
10th Floor, Queen's Tower A, 2-3-1 Minatomirai, Nishi-ku, Yokohama, JAPAN

LRQA reference: YKA4005549

ISO 14001 certificate (examples)

LRQA

Current issue date: 1 April 2024
Expiry date: 31 March 2027
Certificate identity number: 10589451

Original approval(s):
ISO 14001 - 7 March 2003

Certificate of Approval

This is to certify that the Management System of:

Ajinomoto Co., Inc.
Kawasaki Administration & Coordination Office, Kawasaki Plant, L Area

1-1, Suzuki-cho, Kawasaki-ku, Kawasaki-shi, Kanagawa-ken 210-8680, Japan

has been approved by LRQA to the following standards:

ISO 14001:2015
JIS Q 14001:2015

Approval number(s): ISO 14001 – 0071764

The scope of this approval is applicable to:
Manufacture of amino acids and amino acid-based fine chemicals and pharmaceuticals.
Research and development of seasonings, food-related products, amino-acids and amino acid-based fine chemicals and pharmaceuticals.

Yasushi Horikawa

Japan Operations Manager

Issued by: LRQA Limited

LRQA Group Limited, its affiliates and subsidiaries and their respective officers, employees or agents are, individually and collectively, referred to in this clause as 'LRQA'. LRQA assumes no responsibility and shall not be liable to any person for any loss, damage or expense caused by reliance on the information or advice in this document or howsoever provided, unless that person has signed a contract with the relevant LRQA entity for the provision of this information or advice and in that case any responsibility or liability is exclusively on the terms and conditions set out in that contract.
Issued by: LRQA Limited, 1 Trinity Park, Bickenhill Lane, Birmingham B37 7ES, United Kingdom

Page 1 of 1

Certificate of Approval
Ajinomoto Co., Inc.
Kawasaki Administration & Coordination Office, Kawasaki Plant, L Area

bsi.

Certificate of Registration

ENVIRONMENTAL MANAGEMENT SYSTEM - ISO 14001:2015

This is to certify that:

Ajinomoto Co., (Thailand) Ltd.
99 Mu 1, Bang Kadi Sai-Nai Road,
Tambon Bang Kadi,
Amphoe Mueang Pathum Thani,
Pathum Thani
12000
Thailand

Holds Certificate Number: **EMS 767302**

and operates an Environmental Management System which complies with the requirements of ISO 14001:2015 for the following scope:

The Manufacture of Monosodium L-Glutamate.

For and on behalf of BSI:

Michael Lam - Managing Director Assurance, APAC

Original Registration Date: 2020-05-18
Latest Revision Date: 2022-09-26

Effective Date: 2022-12-01
Expiry Date: 2025-11-30

Page: 1 of 1

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Further clarifications regarding the scope of this certificate and the applicability of ISO 14001:2015 requirements may be obtained by consulting the organization.
This certificate is valid only if provided original copies are in complete set.

Information and Contact: BSI, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PP. Tel: + 44 345 080 9000
BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
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Certificate of Registration
AJINOMOTO CO., (THAILAND) LTD., Pathum Thani factory