Ajinomoto Group Sustainability Data Book 2022
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, 2022. Performance statistics are for the 142, 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] CO_2 emissions factors

($t\text{-}CO_2e$)

By region	FY2017	FY2018	FY2019	FY2020	FY2021
Scope 1 emissions	1,244,676	1,196,969	1,013,315	1,008,811	1,005,363
Japan	361,142	327,345	302,700	293,358	288,531
Asia/Africa	519,025	526,405	376,020	389,741	412,339
Europe	46,282	39,021	41,463	37,902	18,721
North America	228,284	219,337	212,796	221,691	206,394
South America	66,896	67,231	65,408	53,877	67,975
China	23,047	17,629	14,926	12,242	11,402
Scope 2 emissions (market-based method)	1,072,248	1,015,723	960,375	901,789	606,594
Japan	136,505	141,952	118,337	120,119	101,645
Asia/Africa	441,259	427,389	414,365	380,604	276,867
Europe	182,140	184,253	171,196	158,749	20,451
North America	213,247	193,766	194,490	179,067	170,258
South America	60,420	40,308	38,306	32,692	6,753
China	38,677	28,056	23,681	30,558	30,620
Scope 1 and 2 total emissions	2,316,924	2,212,692	1,973,690	1,910,600	1,611,957
Japan	497,647	469,297	421,038	413,477	390,177
Asia/Africa	960,284	953,794	790,386	770,346	689,205
Europe	228,422	223,275	212,659	196,651	39,172
North America	441,531	413,103	407,286	400,758	376,652
South America	127,316	107,538	103,714	86,569	74,729
China	61,724	45,686	38,608	42,799	42,022

[1] International Energy Agency

($t\text{-}CO_2e$)

By business activity/division		FY2017	FY2018	FY2019	FY2020	FY2021
Scope 1 emissions		1,244,676	1,196,969	1,013,315	1,008,811	1,005,363
Business activities	Production	-	1,149,384	976,078	970,831	974,789
	Transportation	-	25,976	16,060	17,633	12,524
	Others (office, sales, R&D, etc.)	-	21,609	21,177	20,348	18,050
Business division	Food products	344,819	347,927	338,518	436,813	485,193
	AminoScience	899,857	849,041	674,797	571,998	520,170
Scope 2 emissions (market-based method)		1,072,248	1,015,723	960,375	901,789	606,594
Business activities	Production	-	1,010,908	955,202	897,639	604,268
	Transportation	-	9	2	2	3
	Others (office, sales, R&D, etc.)	-	4,806	5,172	4,148	2,323
Business division	Food products	323,576	379,571	356,388	384,066	311,163
	AminoScience	748,672	636,152	603,988	517,722	295,431

Greenhouse gas emissions per volume unit calculated from IEA CO_2 emissions factors

	FY2017	FY2018	FY2019	FY2020	FY2021
Scope 1 and 2 emissions per volume unit (intensity per ton of product)	0.86	0.84	0.79	0.79	0.68
Scope 3 emissions per volume unit (intensity per ton of product)	3.97	3.76	3.92	4.11	4.05
Reference value: Production volume (1,000 t)	2,684	2,627	2,512	2,423	2,360
Scope 1 and 2 emissions per volume unit (intensity per million yen sales)	-	1.99	1.79	1.78	1.40
Scope 3 emissions per volume unit (intensity per million yen sales)	-	10.71	10.75	11.00	9.53
Consolidated sales (million yen)	-	1,114,308	1,100,039	1,071,453	1,149,370

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_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	-

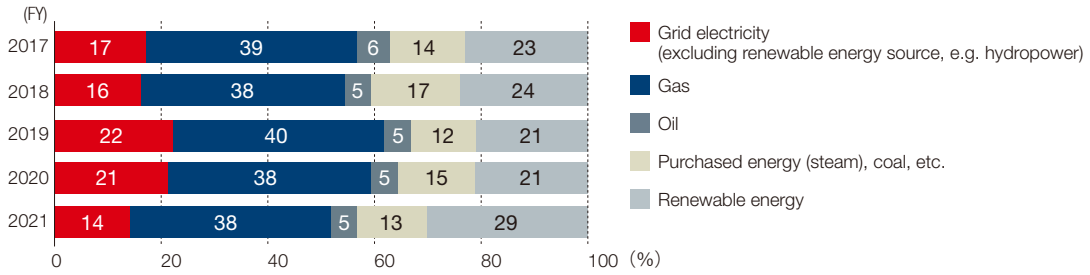
[1] Carbon footprint (CFP) values in the report are calculated in accordance with PCR No. PA-CG-02 from the Japan Environmental Management Association for Industry. The calculation system and the results are backed by a third-party assurance statement from Lloyd's Register Quality Assurance Limited,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

Energy input

	FY2017	FY2018	FY2019	FY2020	FY2021
Energy input (TJ)[3]	39,589	38,468	34,619	33,494	31,733
Energy input intensity of production (per kilo tons of product)	14.8	14.6	13.8	13.8	13.4

[3] TJ: terajoule, T (tera) = 10^{12}. 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	FY2021
Nitrogen oxide (NOx)	9,421	5,224	6,637	5,673
Sulfur oxide (SOx)	10,701	6,779	7,016	7,676
Particulates	1,827	884	1,310	871
CFCs[1]	11	9	7	5

[1] Figures for fiscal 2019 and beyond 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)	FY2017	FY2018	FY2019	FY2020	FY2021
Total water withdrawal[2]	221,863	74,844	69,892	66,926	64,406	59,979
Fresh surface water	180,363	24,433	20,672	19,630	17,004	17,259
Brackish surface water/ seawater	0	0	0	0	0	0
Fresh groundwater, renewable[3]	0	16,371	15,076	14,366	13,041	13,769
Fresh groundwater, non-renewable[3]	-	0	0	0	0	0
Produced water	0	0	0	0	0	0
Municipal water (including industrial water)	41,500	34,041	34,144	32,930	34,361	28,950
Water consumption per production volume unit (intensity per ton of product)	123	28	27	27	27	25
Reduction rate (vs. FY2005)	-	77%	78%	78%	78%	79%
Ref.: Total amount of production (1,000 t)	1,800	2,684	2,627	2,512	2,423	2,360
Total water discharge[2]	201,300	60,464	55,800	52,342	51,564	48,034
Fresh surface water (processed by the Group)	47,000	28,341	27,498	24,297	24,088	20,490
Brackish surface water/ seawater	0	0	0	0	0	0
Groundwater	0	0	0	0	0	0
Third-party destinations	10,300	11,299	11,273	11,291	11,139	11,360
Total water recycled or reused	144,000	20,824	17,029	16,754	16,338	16,184
Proportion of water recycled or reused	65%	28%	24%	25%	25%	27%
Total water consumption	20,563	14,380	14,092	14,584	12,842	11,945

BOD (tons)	550	294	312	283	284	263
Nitrogen (tons)	3,200	394	501	506	583	430

[2] 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.

[3] Data categories were reviewed based on that fresh groundwater is reclaimed and used as well water.

Environmental Data

3Rs of waste

Volume of waste and by-products and resource recovery ratio

(tons)

	FY2017	FY2018	FY2019	FY2020	FY2021
Hazardous waste (waste acid, waste alkali, waste oil, cinder)					
Generated	59,162	69,991	83,834	81,216	83,770
Recycled	58,862	68,422	83,429	80,892	83,399
Incinerated	24	40	60	38	24
Landfills	276	1,529	345	286	347
Non-hazardous waste					
By-products[1]					
Generated	2,395,249	2,194,566	2,021,002	1,615,808	1,546,599
Composted	2,394,976	2,194,470	2,020,885	1,615,713	1,543,988
Incinerated	0	0	0	0	0
Landfills	273	96	117	95	2,611
Other[2]					
Generated	178,989	174,651	181,246	173,310	195,832
Recycled	161,455	153,388	156,432	150,295	169,243
Incinerated	2,066	2,821	2,121	1,784	2,318
Landfills	15,467	18,442	22,693	21,231	24,271
Total generated	2,633,400	2,439,208	2,286,082	1,870,334	1,826,201
Total recycled	2,615,293	2,416,280	2,260,745	1,846,900	1,796,630
Total waste	18,107	22,928	25,337	23,434	29,571
Resource recovery ratio	99.3%	99.1%	98.9%	98.7%	98.4%

[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
Wood/Paper fiber	150	150	150
Recycled and/or certified material ratio	84%	83%	86%
Metal (e.g. aluminum or steel)	13	13	13
Recycled and/or certified material ratio	-	-	-
Glass	5.4	6.4	6.6
Recycled and/or certified material ratio	-	-	-
Plastic	72	70	69
Recyclable plastic packaging ratio	39%	38%	38%
Compostable plastic packaging ratio	0%	0%	0%

Environmental Data

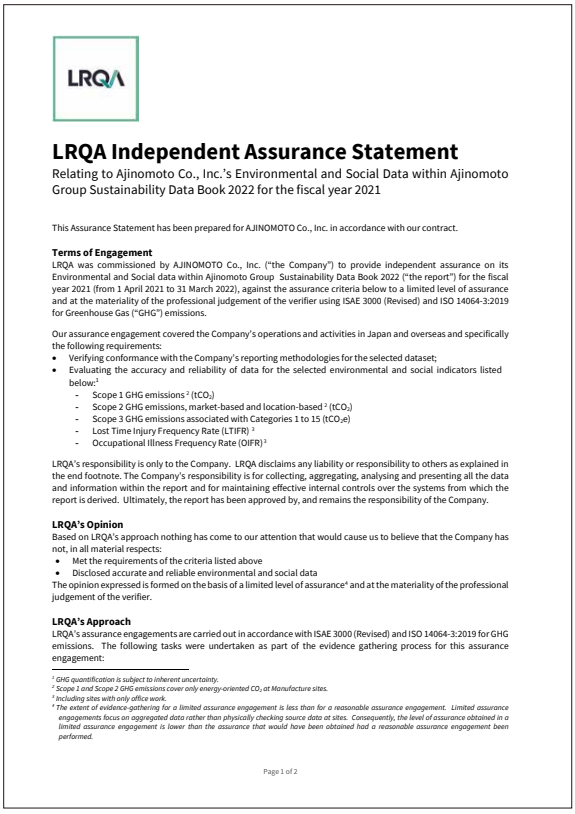
Volumes of food loss and waste[1]

(tons)

	FY2019	FY2020	FY2021	FY2021
Total generated volume	53,226	46,729	48,901	47,377
Total volume used for alternative purposes	25,515	21,222	26,634	28,115
Total discarded volume[2]	27,710	25,507	22,267	19,262
Total discarded volume per volume unit (intensity per ton of product)	10.6	10.0	9.2	8.2
Reference value: Production volume (1,000t)	2,609[3]	2,542[3]	2,423	2,357[3]
vs. Fiscal 2018 (%)	-	95%	87%	77%

[1] Measured with reference to the Food Loss & Waste Accounting and Reporting Standard. Past performance, including its measurement methods, is reviewed retroactively. (Measurement methods may differ between target organizations.)
[2] "Total discarded volume" refers to "Total volume" of "Food Loss and Waste" in P94.
[3] We used data different from production volume set forth in P74 and P111 for convenience of aggregation.

Third-party assurance



LRQA

LRQA Independent Assurance Statement

Relating to Ajinomoto Co., Inc.'s Environmental and Social Data within Ajinomoto Group Sustainability Data Book 2022 for the fiscal year 2021

This Assurance Statement has been prepared for AJINOMOTO Co., Inc. in accordance with our contract.

Terms of Engagement

LRQA was commissioned by AJINOMOTO Co., Inc. ("the Company") to provide independent assurance on its Environmental and Social data within Ajinomoto Group Sustainability Data Book 2022 ("the report") for the fiscal year 2021 (from 1 April 2021 to 31 March 2022), 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 (Revised) and ISO 14064-3:2019 for Greenhouse Gas ("GHG") emissions.

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] (tCO_2)
  - Scope 2 GHG emissions, market-based and location-based [2] (tCO_2)
  - Scope 3 GHG emissions associated with Categories 1 to 15 (tCO_2e)
  - Lost Time Injury Frequency Rate (LTIFR) [3]
  - Occupational Illness Frequency Rate (OIFR) [3]

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 material respects:

- Met the requirements of the criteria listed above
- Disclosed accurate and reliable environmental and social data

The opinion expressed is formed on the basis of a limited level of assurance[4] and at the materiality of the professional judgement of the verifier.

LRQA's Approach

LRQA's assurance engagements are carried out in accordance with ISAE 3000 (Revised) and ISO 14064-3:2019 for GHG emissions. The following tasks were undertaken as part of the evidence gathering process for this assurance engagement:

[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 sites with only office work.
[4] 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 lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

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LRQA

- Auditing the Company's data management systems to confirm that there were no significant errors, omissions or misstatements in the report. We did this by reviewing the effectiveness of data handling procedures, instructions and systems, including those for internal verification.
- Interviewing with those key people responsible for compiling the data and drafting the report.
- Sampling datasets and traced 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 2021; and
- Visiting AJINOMOTO BAKERY CO., LTD. Shimada Factory and AJINOMOTO HEALTHY SUPPLY CO., INC. Takasaki Site to confirm the data collection processes, record management practices, and to physically check the equipment and the monitoring points.

Observations

Further observations and findings, made during the assurance engagement, are:
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: 16 June 2022

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

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