Rengo Group

Environmental Data Book 2024

RENGO

Rengo Group

Environmental Data Book 2024

• Contents

• Target Period

Japan: FY3/2024 (April 1st 2023 to March 31st 2024)
Overseas: 2023(January 1st 2023 to December 31st 2023)

• Organizational Scope

Rengo Co., Ltd. aggregates data, given in the Environmental Data Book, from consolidated subsidiaries. However, non-manufacturing companies whose business activities have a small impact on the environment are excluded. For the same reason, non-manufacturing sites (head office, sales office, warehouse and so on) are excluded. Detailed explanations are in the "Organizational Scope by Category".

• Independent Practitioner's Assurance (Symbol of Assurance: ☑)

For environmental data subject to the independent practitioner's assurance, the symbol of assurance is indicated as a sign that the information has been assured.

• Calculation of Environmental Data

- Figures are rounded to the nearest number and may not add up to the total.
- "–" indicates outside the scope of calculations; "0" refers to a figure of less than 0.5.
- In conducting calculations for this fiscal year, some figures from past fiscal years were revised.

• Number of targeted organizations (as of the end of March 2024)

Non-consolidated	Rengo Co., Ltd.	1
Domestic consolidated subsidiaries	Subsidiaries	41
	Second-tier subsidiaries	9
Overseas consolidated subsidiaries	Subsidiaries	8
	Second-tier subsidiaries	97
Total		156

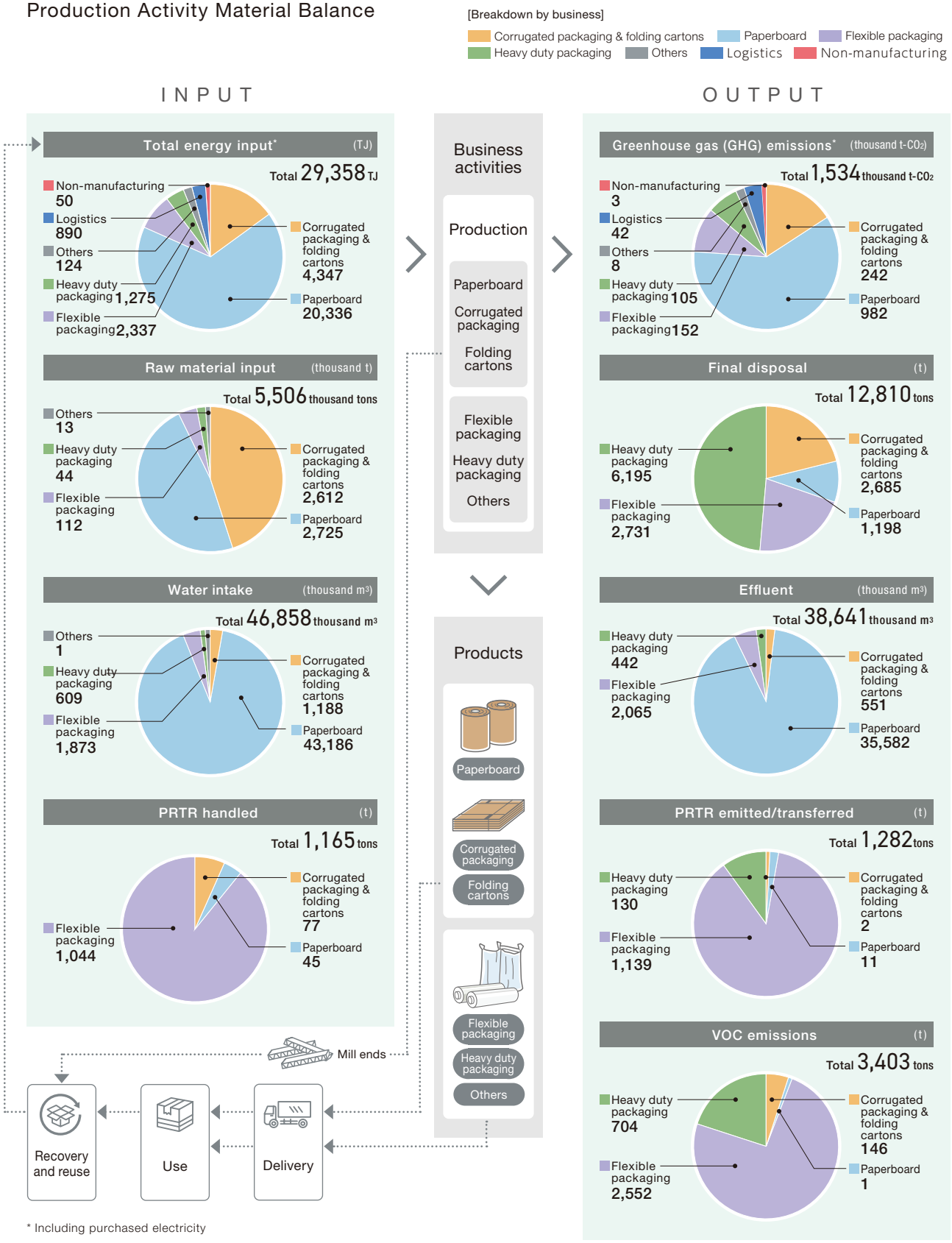
• Organizational Scope by Category (2023 Data)

Page	Category	Item \ Target organization	Non-consolidated	Consolidated subsidiaries				Disclosure ratio (%)
			Rengo Co., Ltd.	Domestic consolidated subsidiaries		Overseas consolidated subsidiaries		
				Subsidiaries	Second-tier subsidiaries	Subsidiaries	Second-tier subsidiaries	
04	Management	ISO14001 Certification	○	○	○	○	○	
		ISO27001 Certification	○	–	–	–	–	
05	Third-party certifications	FSC Certification	○	○	○	○	○	
		ISCC Certification	–	○	–	–	–	
06	Energy	Trend of Energy Usage by Type *1	○	○	○	○	○	100
		Trend of Power generation	○	○	○	○	○	100
08	Greenhouse Gas (GHG)	Trend of Domestic GHG Emission	○	○	○			100
		Trend of Gross Global GHG Emission (Scope1,2 and 3) *1	○	○	○	○	○	100
09	Raw Material and Waste	Trend of Raw Material Input by Type *2	○	○	○	○	–	81
		Trend of Recycled Material Utilization Rate *3	○	○				100
		Trend of Waste Generated, Final Disposal Volume and Effective Utilization Rate of Waste by Type *4	○	○	○	○	○	100
10	Environmentally friendly Products	Trend of Viscopearl Production	○					100
11	Water Resource	Trend of Water Intake by Water Source *4	○	○	○	○	○	100
		Water Risk Assesment	○	○	○	○	○	100
12	Chemical Substances Management	Trend of Chemical Substances Subjected to The PRTR System Amount Handled	○	–	–			36
		Trend of Chemical Substances Subjected to The PRTR System Amount Emitted and Transferred	○	○	○			100
13	Environmental impact (emissions)	Trend of Releases into the Atmosphere by Type *2	○	○	○	○	–	81
		Trend of Water Discharge by Discharge Destination *4	○	○	○	○	○	100
		Trend of Releases into Water by Type *2	○	○	○	○	–	81

Note:"-" indicates no data; "＼" indicates not applicable
Note:Disclosure ratio=Total Sales of calculation-targeted companies / Total sales of Rengo group
*1 Including logistics and non-manufacturig sites
*2 Excluding domestic second-tier subsidiaries in 2021 and 2022 data.
*3 Scope : paperboard manufacturing sites
*4 Excluding second-tier subsidiaries in 2021 and 2022 data.

Material Balance

Production Activity Material Balance



* Including purchased electricity

Management

• ISO14001 Certification (as of March 31, 2024)

Target organization	Number of sites	Number of certified sites	Ratio of certified sites*
Non-consolidated	34	34	100
Consolidated subsidiaries	272	102	37
Total	306	136	44

* Ratio of certified locations = (Number of certified sites) / (Number of sites)

• ISO27001 Certification (as of March 31, 2024)

Category	Company	Certified organization
Non-consolidated	Rengo	Tonegawa Division
		Yashio Mill
		Amagasaki Mill

Third-party Certifications

• FSC Certification (as of March 31, 2024)

Target organization	Number of sites	Number of certified sites	Ratio of certified sites*
Non-consolidated	34	34	100
Consolidated subsidiaries	272	97	36
Total	306	131	43

* Ratio of certified locations = (Number of certified sites) / (Number of sites)

• ISCC Certification (as of March 31, 2024)

Category	Company	Certified organization
Domestic consolidated subsidiaries	SunTox	Kanto Plant, Tokuyama Plant
	Howa Sangyo	Narashino Plant, Higata Plant, Kyoto plant, Fukuoka Plant

Coefficients of Energy and Greenhouse Gas (GHG)

• Caluclation of Energy Usage and Scope 1, 2 and 3

Calculations of energy usage and greenhouse gas emissions use the following coefficients. The reported values are the sum of actual results for the group companies as of the reporting year.

		Japan	Overseas
Caluclation standard		Act on Promotion of Global Warming Countermeasures (adjusted emissions)	GHG protocol
Heat value coefficient	Energy	• Factors based on the Energy Conservation Act	• Factors based on the Energy Conservation Act •3.6GJ/MWh is used for converting solar power to energy
Emissions factor	Fuel	• Factors based on the Act on Promotion of Global Warming Countermeasures ("Act on Global Warming")	• Factors based on the laws and regulations of the countries to which sites belong to, or the Act on Global Warming (2022 results)
	Electricity	• Adjusted emission factors based on the Act on Global Warming	• Emission factors for each electricity provider, or value of IEA2020 (2022 results)
Scope 3	Database for calculation	• Basic Guideline for calculating greenhouse gas emissions throughout the supply chain (Ver2.5) • LCI database IDEAv3.3 (AIST Research Institute of Science for Safety and Sustainability IDEA Lab) • Emissions unit values for accounting of greenhouse gas emissions etc., by organizations throughout the supply chain (Ver3.3) (Ministry of the Environment/Ministry of Economy, Trade and Industry)	
	Notices of calculation	• Ct. 9 : Downstream transportation and distribution, Ct.14: Franchise are out of scope.	

• Explanations of Scope 1, 2 and 3

Scope 1

Direct GHG emissions occur from use of fuel in boilers and waste incinerators, and from industrial process emissions

Scope 2

Indirect emissions occur from use of electricity and heat (steam, hot water, cold water) supplied from other companies

Scope 3

Indirect emissions not included in Scope 1or 2 (Emissions from other companies, associated with the organization's activities)

CO_2 from energy

Emissions occur from use of fuel(petroleum, Gas and so on)

CO_2 from non-energy

Emissions occur from incineration of VOC

CH_4, N_2O

Emissions occur from use of fossil fuel and waste-derived fuel, night-soil treatment in septic tanks, and effluent treatment

Energy

• Trend of Energy Usage by Type

unit: TJ

	Category	Target organizationory	FY3/2022	FY3/2023	FY3/2024
Energy usage	Fossil fuels	Non-consolidated and consolidated subsidiaries	17,160	15,534	☑ 15,480
	Purchased electricity	Non-consolidated and consolidated subsidiaries	7,611	7,738	☑ 6,572
	Purchased steam	Non-consolidated and consolidated subsidiaries	235	234	☑ 240
	"Waste-derived fuel (RPF, waste tires, waste plastics, reclaimed oil)"	Non-consolidated and consolidated subsidiaries	750	1,566	☑ 2,152
	Biomass fuel	Non-consolidated and consolidated subsidiaries	4,776	5,079	☑ 4,752
	Electricity derived from renewable energy*	Non-consolidated and consolidated subsidiaries	44	96	☑ 163
		Total	30,575	30,248	☑ 29,358
Renewable energy ratio			15.8%	17.1%	16.7%

* Electricity derived from solar power generation (self-generation) ,and purchased electricity derived from renewable energy

• Trend of Power generation

unit: MWh

	Category	Target organizationory	FY3/2022	FY3/2023	FY3/2024
Power generation	Derived from non-renewable sources*	Non-consolidated and consolidated subsidiaries	684,971	711,610	705,464
	Derived from renewable sources	Non-consolidated and consolidated subsidiaries	138,571	161,478	☑ 158,309
		Total	823,542	873,088	863,773

* Derived from fossil fuel and waste-derived fuel

Greenhouse Gas (GHG)

• Trend of Domestic GHG Emission (reporting of Act on Promotion of Global Warming Countermeasures (adjusted))

unit: thousand t-CO_2

	Category	Target organizationory	FY3/2014	FY3/2022	FY3/2023	FY3/2024
Energy usage	use of fuel	Non-consolidated and consolidated subsidiaries	1019	1043	946	896
	use of supplied electricity	Non-consolidated and consolidated subsidiaries	373	335	330	306
	use of supplied heat	Non-consolidated and consolidated subsidiaries	10	9	9	9
CO_2 from non-energy	excluding use of waste as fuel	Non-consolidated and consolidated subsidiaries	–	–	–	1
Other gases	CH_4, N_2O	Non-consolidated and consolidated subsidiaries	13	19	20	6
		Total	1416	1405	1305	1218

• Trend of Gross Global GHG Emission(Scope1,2 and 3) (based on GHG protocol)

unit: thousand t-CO_2

		Category	Target organizationory	FY3/2022	FY3/2023	FY3/2024
Scope 1 Emissions			Non-consolidated and consolidated subsidiaries	11,262	1,151	☑ 1,131
Scope 2 Emissions			Non-consolidated and consolidated subsidiaries	403	398	☑ 403
		Total of Scope 1and 2 Emissions		1,665	1,550	☑ 1,534
Scope 3 Emissions	Category 1	Purchased goods and services	Non-consolidated and consolidated subsidiaries	2,697	2,438	☑ *1 2,482
	Category 2	Capital goods	Non-consolidated and consolidated subsidiaries	295	151	209
	Category 3	Fuel- and energy related activities (not included in scope 1 or scope 2)	Non-consolidated and consolidated subsidiaries	570	277	238
	Category 4	Upstream transportation and distribution	Non-consolidated and consolidated subsidiaries	57	425	442
	Category 5	Waste generated in operations	Non-consolidated and consolidated subsidiaries	2	67	60
	Category 6	Business travel	Non-consolidated and consolidated subsidiaries	24	2	2
	Category 7	Employee commuting	Non-consolidated and consolidated subsidiaries	2	29	29
	Category 8	Upstream leased assets	Non-consolidated and consolidated subsidiaries	0	1	2
	Category 10	Processing of sold products	Non-consolidated and consolidated subsidiaries	219	189	189
	Category 11	Use of sold products	Non-consolidated and consolidated subsidiaries	14	11	7
	Category 12	End-of-life treatment of sold products	Non-consolidated and consolidated subsidiaries	83	69	120
	Category 13	Downstream leased assets	Non-consolidated and consolidated subsidiaries	2	.0	.0
	Category 15	Investments	Non-consolidated and consolidated subsidiaries	248	– *3	131
			Total of Category 1,3,4,5 *2	3,326	3,207	3,222
			Total	4,212	–	3,911
Scope 1,2 and 3 Emissions			Grand Total	5,877	–	5,446

*1 Only the data of non-consolidated is assured
*2 Target categories of SBT
*3 Not calculated

Raw Material and Waste

• Trend of Raw Material Input by Type

unit: thousand t

	Category	FY3/2022	FY3/2023	FY3/2024
Raw material input	Recovered paper	2,658	2,600	2,506
	Pulp	50	57	51
	Paperboard	2,645	2,586	2,628
	Wood chips	158	165	173
	Resin, film, synthetic fiber	211	178	148
	Total	5,722	5,586	5,506

• Trend of Recycled Material Utilization Rate

unit: %

	Target organization	FY3/2022	FY3/2023	FY3/2024
Recovered paper utilization rate for paperboard*	Non-consolidated and consolidated subsidiaries	98.6	98.6	98.7

*(Amount of recovered paper used) / (Amount of recovered paper + pulp used)

• Trend of Waste Generated, Final Disposal Volume and Effective Utilization Rate of Waste by Type

unit: thousand t

	Category	FY3/2021	FY3/2022	FY3/2023
Waste generated *1	Paper Scraps	329	318	339
	Sludge	11	12	13
	Waste Plastics	25	26	31
	Others	55	60	60
	Specially Controlled Industrial Waste	0	0	1
	Total	420	415	444
Final disposal volume of waste *2	Paper Scraps	4	1	1
	Sludge	3	3	2
	Waste Plastics	2	1	4
	Others	3	2	5
	Specially Controlled Industrial Waste	0	0	0
	Total	7	7	13
Effective Utilization Rate of Waste (%) *3	Paper Scraps	99.9	99.6	99.7
	Sludge	76.1	76.3	82.7
	Waste Plastics	92.8	95.3	86.0
	Others	95.3	96.8	91.6
	Specially Controlled Industrial Waste	91.4	94.6	98.0
	Total	98.2	98.3	97.1

*1 Including valuable waste
*2 Waste generated - Waste effectively used
*3 (Waste generated - Final disposal volume of waste) / Waste generated

Environmentally friendly Products

• Trend of Viscopearl Production Volume

unit: t

	Target organization	FY3/2022	FY3/2023	FY3/2024
Viscopearl Production Volume	Non-consolidated	53	47	59

About Viscopearl

Viscopearl is a spherical cellulose bead made from wood pulp, Rengo Co., Ltd. Offers them with a variety of size(diameters from 3 μm to 4 mm.)These products are biodegraded into water and CO_2 by microorganisms,when released into ground, fresh watar and seawater. Due to this characteristic Hopes are especially high for them as an alternative to microplastic beads.

Water Resource

• Trend of Water Intake (by Water Source)

unit: thoousand ㎥

	Category	Target organizationory	FY3/2022	FY3/2023	FY3/2024
Water Intake	Portable water	Non-consolidated and consolidated subsidiaries	998	951	1,340
	Industrial water	Non-consolidated and consolidated subsidiaries	27,511	25,526	25,541
	Ground water	Non-consolidated and consolidated subsidiaries	18,606	17,695	17,487
	Surface water	Non-consolidated and consolidated subsidiaries	2,753	2,679	2,488
	Others	Non-consolidated and consolidated subsidiaries	0	0	1
		Total	49,867	46,850	46,858

• Water Risk Assesment

unit: water intake…thousand ㎥, Ratio of waterintake…%

	Number of target sites	water intake	Ratio of water Intake
Low	71	347	1
Low - medium	98	13,575	29
Medium - high	93	32,785	70
High	21	68	0
Very high	23	83	0
Total	306	46,858	100

*Evaluation was performed using Aqueduct, water risk evaluation tool developed by WRI. Risks were evaluated by five grades using Water Risk Atlas Baseline Water Stress

Chemical Substances Management

• Trend of Chemical Substances Subjected to The PRTR System Amount Handled

unit: Class 1 Chemical Substances: tons

	Category	Target organization	FY3/2022	FY3/2023	FY3/2024
Amount handled	Class 1 Chemical Substances	Non-consolidated	1,225	1,326	1,165

• Trend of Chemical Substances Subjected to The PRTR System Amount Emitted, and Transferred

unit: Class 1 Chemical Substances: tons; Dioxins: mg-TEQ

	Category	Target organizationory	FY3/2022	FY3/2023	FY3/2024
Amount emitted	Class 1 Chemical Substances	Non-consolidated and consolidated subsidiaries	1,246	1,244	1,201
	Dioxins	Non-consolidated and consolidated subsidiaries	42	19	22
Amount transferred	Class 1 Chemical Substances	Non-consolidated and consolidated subsidiaries	70	73	81
	Total Dioxins	Non-consolidated and consolidated subsidiaries	1,359	757	113
Total amount emitted and transferred	Class 1 Chemical Substances	Non-consolidated and consolidated subsidiaries	1,316	1,317	1,282
	Dioxins	Non-consolidated and consolidated subsidiaries	1,401	776	134

Environmental Impact (Emissions)

• Trend of Releases into the Atmosphere by Type

unit: t

	Category	Target organizationory	FY3/2022	FY3/2023	FY3/2024
Releases into the atmosphere by type	SOx	Non-consolidated and consolidated subsidiaries	461	511	321
	NOx	Non-consolidated and consolidated subsidiaries	1,448	1,432	1,420
	Dust	Non-consolidated and consolidated subsidiaries	49	39	63
	VOC*	Non-consolidated and consolidated subsidiaries	3,293	3,472	3,403

*Scope of the volatile organic compounds (VOCs) is the top five substances discharged by members of the Japan Paper Association (toluene, 2-butanone, ethylacetate,2-propanol, and methanol)

• Trend of Water Discharge by Discharge Destination

unit: Thousand m³

	Category	Target organizationory	FY3/2022	FY3/2023	FY3/2024
Water Discharge	Sewage	Non-consolidated and consolidated subsidiaries	25,679	26,132	25,078
	Rivers	Non-consolidated and consolidated subsidiaries	15,359	12,777	13,563
	Others	Non-consolidated and consolidated subsidiaries	0	0	0
		Total	41,037	38,909	38,641

• Trend of Releases into Water by Type

unit: t

	Category	Target organizationory	FY3/2022	FY3/2023	FY3/2024
Releases into water by type	BOD	Non-consolidated and consolidated subsidiaries	1,100	653	646
	COD	Non-consolidated and consolidated subsidiaries	1,985	1,767	1,507
	SS	Non-consolidated and consolidated subsidiaries	757	685	630
	Oil (n-Hex)*	Non-consolidated and consolidated subsidiaries	33	32	33

*Scope : excluding overseas consolidated subsidiaries

Independent Practitioner's Assurance

Rengo Co., Ltd. has received independent practitioner's assurance from Japan Management Association GHG Certification Center for environmental data (energy inputs,Self-power generation by renewable energy sources, Scopes 1 and 2 greenhouse gas emissions, and Scope 3 (category 1) greenhouse gas emissions) given in the Japanese version of Rengo Group Enviromental Data Book 2024.

Greenhouse gas emissions Verification Statement

30 September 2024

Rengo Co., Ltd.

Japan Management Association
GHG Certification Center
Chiga Maruo, Senior Executive

1. Objective and Scope of Verification

Japan Management Association GHG Certification Center (JMACC) was commissioned by Rengo Co., Ltd. (hereinafter, referred to as "the Organization") to conduct independent verification on a limited level of assurance. The scope of verification is the following greenhouse gas (GHG) emissions and energy consumption etc. information (hereinafter, referred to as "the Monitoring data") within the organizations※1 in its fiscal year 2023 Monitoring Report (hereinafter, referred to as "the Report") from 1 April 2023 to 31 March 2024.

1) SCOPE 1 GHG emissions;
   - Direct CO_2 emissions of the Organization by using fossil fuel
   - Emissions of Methane and Nitric oxide emitted by business activities of the Organization

2) SCOPE 2 GHG emissions;
   Indirect CO_2 emissions of the Organization by using electricity and heat (steam)

3) SCOPE 3 GHG emissions;
   Indirect CO_2 emissions within the category 1 of SCOPE 3※2

4) Energy Consumption etc.;
   Energy consumption amount by fuel type, and power generation of solar and biomass of the Organization

The objective of this verification is to confirm that the Monitoring data in the Organization's applicable scope have been correctly calculated and reported in line with the criteria of the monitoring procedure※3, and to express our views as a third party. The Organization's responsibility is to prepare the Report and report the Monitoring data, and JMACC's responsibility is to express our views on the Monitoring data of the Report as a third party.

2. Procedure of Verification

The Report was verified in accordance with the requirements of ISO14064-3:2019 (Greenhouse gases Part 3: Specification with guidance for the verification and validation of greenhouse gas statements), and following processes were implemented:

- Assessment regarding to the information to specify the Monitoring data in the Report, monitoring procedure, monitoring system and related documents
- Interviews with person in charge of making the Report
- Conducting on-site visits, for confirming the scope of calculations, emission sources, and data collection system of the Amagasaki Plant, Yashio Plant, Settsu Carton Co., Ltd. Itami Plant, and Howa Sangyo Co., Ltd. Hikata Factory
- Verifying the evidence for confirmation of the accuracy of the Monitoring data by sampling

3. Conclusion of Verification

Within the scope of the verification activities employing the methodologies mentioned above, nothing has come to our attention that caused us to believe that Organization's Monitoring data in the Report of fiscal year 2023 were not calculated and reported in conformance with the criteria.

Verified GHG emissions (t-CO_2e)	
SCOPE 1	**1,131,151**
SCOPE 2※4	**403,142**
SCOPE 3 (Category 1)	**653,118**

Verified Energy Consumption, etc. (GJ or MWh)			
Total Energy consumption※5		–	**29,357,976 GJ**
Fossil fuel		–	**15,480,101 GJ**
Purchased power (non-renewable) ※6		**816,576 MWh**	**6,571,655 GJ**
Purchased steam		–	**239,540 GJ**
Waste-derived fuel※7		–	**2,151,512 GJ**
Biomass energy※8		–	**4,752,067 GJ**
Self-generation by photovoltaics and purchased power from renewable energy		**32,801MWh**	**163,100 GJ**
Self-power generation by renewable energy sources	**Biomass** **- Self-consumption**	149,061 MWh 149,061 MWh	–
	Photovoltaics **- Self-consumption**	9,248 MWh 5,296 MWh	–

NOTE:

※1 : Organizational boundary : The consolidated companies of the Organization, except for the Scope 3 calculation mentioned as below

※2 : Overview of categories of SCOPE 3

- Category 1 (Purchased goods and services) : Purchased materials, services and biomass/waste-derived fuels used in process and indirect expenses. Organizational boundary is Rengo Co., Ltd.

※3 : Monitoring procedure of SCOPE 1, 2 and 3 : "Basic Guidelines on Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (ver.2.6) ","Database of emissions unit values for Greenhouse Gas Emissions Throughout the Supply Chain (ver.3.4) ", "IDEA ver3.4 by National Institute of Advanced Industrial Science and Technology" and "Monitoring procedures" prepared by the organization.

※4 : Emission factor for electricity consumption

Japan: Adjusted emission factor under GHG emissions reporting system of Japan

Other countries: Emission factors by power supplier or published by national governments/authorities, or IEA Emissions Factors 2023

※5 : Total amount (GJ, MWh) is calculated including decimal point of each item

※6 : Power purchased without being designated as renewable energy (residuals, etc.)

※7 : Total of Refuse paper & plastic fuel, waste tires, waste plastic, reclaimed oil

※8 : Total of black liquor, wood chips and waste, and paper sludge